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LECTURE I

IT may be considered to have been the intention of Dr. Gavin Milroy when founding these lectures that they should be a means of enabling a man who had been at work in some particular corner of public health to obtain useful publicity for his subject, and at the same time impose on him the self-discipline of reviewing his experience of that subject in the way which is demanded of one who has the honour of lecturing to the Royal College of Physicians. It seemed to me that I could find such a corner, which would justify my lecturing on it now. After 38 years of official work in the Government health service, I am handing on to my successor the work in applied epidemiology and general hygiene which has been my chief occupation as Senior Medical Officer at the Ministry of Health. That work has come increasingly to be related with, and sometimes even to depend upon, international coöperation, and it is to some aspects of this coöperation that I am now inviting your attention.

Apart from a few questions of port sanitary administration, and from negotiations with foreign countries in connexion with the control over the wholesomeness of imported foods which began with Mr. Burns' Public Health (Regulations as to Food) Act, 1905, I had little personal experience of official international health work before 1914, when the Local Government Board proposed to the Foreign Office that I should be the delegate for Great Britain at the International Public Health Office in Paris. Of this office, which, because French is its official language, is better known as the "Office International d'Hygiène publique," I will have more to say later. Its importance in British eyes was at that time mainly diplomatic. The British delegate was expected to do his best to make our liberal ideas prevail when it came to imposing restrictions on shipping on account of infectious disease, and be ready to give a rational turn, from the point of view of British interests and British hygiene, to the administrations in the Suez Canal, at Constantinople and elsewhere, which controlled the key points by which first cholera, and later plague, might gain access to Europe. In this respect he had to maintain the positions which, since the cholera pandemics of the middle of last century and the later Hamburg outbreak of 1892, the medical advisers of the British Government, notably Netten Radcliffe and Thorne-Thorne, had successfully fought for and secured. But he was not expected, nor at that time would it have appealed to him, to make the international office a means by which the delegates of the several countries there represented (and at that time many important countries remained outside) could concert together common official action for the prevention of disease or for the promotion of public health, outside these narrow limits. Within them our Government had been admirably served, first by my colleague Dr. Theodore Thomson, whose untimely death was an incalculable loss to State medicine in England, and then for a short period by the late Dr. R. Johnstone, who had seen through the International Sanitary Convention of 1912. I need not speculate on what I might have myself made of the position at that time; the war years supervened, during which most of the functions of the Paris Office were in abeyance. After 1918 the situation was altered. The war itself had shown the advantages, as between the allied armies and countries, of pooling information about disease prevalence and prevention—or to put the matter inversely, the drawbacks of inadequate coöperation. The great forces of the Red Cross, with their international outlook, could hardly have been demobilised without thought being given to the extension of their universality and catholicity to the post-war world for which we were then groping. The League of Nations was being formed, and the ideals of its founders for obtaining union between nations extended to its providing, or even forcing on, international coöperation in technical and humanitarian questions. Moreover, in many countries, by the formation of separate Ministries of Health or otherwise, public health was receiving a higher official status, and was undertaking new work calling for international contacts. Finally a common peril, the threatened spread of epidemic typhus from Russia through Poland to the west of Europe in 1918 to 1920, made an immediate call for coöperation.

The years 1919–21 thus were the occasion of many conferences and discussions with the object of securing, if possible, a single mechanism, dependent on the League of Nations, by which health questions affecting Governments could be dealt with internationally, and of settling at the same time what particular questions were ready for the proposed machine. Those who are interested in the phase in which the matter stood in 1921 may be referred to an address which I gave to the Society of Medical Officers of Health in February of that year (THE LANCET, 1921, i., 415) on International Organisation and Public Health. It is true that this address led up to the description of the mechanism for the purpose which had been adopted by the first Assembly of the League in December, 1920, but did not materialise—the chief reason being that certain important Governments objected to the Paris Office being placed under the direction of the League of Nations. But they will also find a number of health matters then catalogued as requiring joint Government action which have since materialised and have now been adequately treated by the actual international machinery which was ultimately arranged, and has been in operation during the last 13 years.

A few landmarks have here to be noted for reference. The Secretary-General, personally and through Dame Rachel Crowdy, D.B.E., who was then charged with this subject at Geneva, and afterwards through the late Dr. E. J. Steegmann, acting Medical Secretary, took steps to consult responsible officers in the public health services of several countries, including the United States, while several members of the Council of the League, particularly M. Léon Bourgeois and Lord Balfour, were active in pressing for immediate attention to the question. The then Director (M. Cazotte) and Assistant Director (Dr. Pottevin) of the Office International d'Hygiène publique,

* The Milroy Lectures delivered before the Royal College of Physicians of London on Feb. 27th and March 1st, 1934, with a few subsequent additions of detail. Lectures II. and III. will appear in coming issues.

and M. Velghe, the President of its Permanent Committee, were naturally brought into these consultations, as was the League of Red Cross Societies through its General Medical Director (Colonel R. P. Strong), and the International Labour Office, in respect of its industrial medical section, through Mr. H. B. Butler. By July, 1919, the position was ripe for an informal conference, held in London at the Ministry of Health, over which its then Parliamentary Secretary, the present Lord Astor, presided. This conference was then invited by the Council of the League of Nations to reassemble as a formal conference, adding to its members a small number of international health experts. This formal conference met in London in April, 1920. Based on its work a draft constitution of a public health organ of the League was submitted to a meeting of the Council at San Sebastian in August, 1920, which I attended as technical adviser to Lord Balfour. There emerged the constitution accepted, with a few modifications, by the First Assembly on Dec. 10th, 1920, and recorded in its minutes. The decision of the Assembly, to become effective, required the assent of the Governments parties to the Rome Convention, 1907, and, as stated above, it was afterwards found that this assent could not be obtained. The First Assembly plan, stated briefly, was to recognise the existing state of things by continuing the Office International with its existing personnel and offices at Paris, which would be the normal place for meetings, but to transfer much of its executive work and all new undertakings to a medical secretariat at Geneva. The latter was to be directed by a small technical executive "Standing Committee," which in its turn was to get its policy from and be responsible to a general Health Council. The last-named would have consisted of the delegates to the Permanent Committee of the Office International with the addition of technical delegates from various countries not then participating in the work of the Office. The general Health Council—i.e., the enlarged Permanent Committee of the Office—the Executive "Standing" Committee, and the Geneva medical staff were for their particular business to be in a mutual relation comparable to that of the Assembly, Council, and Secretary-General of the League itself.

The point of this scheme which is most noteworthy in view of subsequent developments was that it made the whole health work of the League, including that of the Paris Office which would have been placed under the direction of the League, ultimately dependent on a general assembly consisting of technical delegates all nominated officially to that position by their respective Governments.

The catalogue which I made in my 1921 address of the principal subjects which were then being brought up as requiring international action showed the chief to have been the revision of the international sanitary conventions, the establishment of a new system by which public health administrations could rapidly exchange intelligence about the occurrence of infectious diseases, provision at the principal seaports of agreed practices for treating venereal diseases in the mercantile marine and for the destruction of rats, unification of vital statistics, and organised relief work for major epidemics, such as the European typhus above referred to.

Looking back at that catalogue, I gladly recognise its incompleteness; many more questions than were then foreseen have during this period received effective attention from the International Health Office at Paris or the League of Nations Health Organisation at Geneva. It may be regretted that the formal combination of both these organisations under the League was not established as intended in December, 1920; but it may be contended on the other hand that several events have shown the advantage of the decision that they should function separately under a specially elaborated system of liaison, and one which can at any time be reconsidered if circumstances call for it.

The main lines of this liaison were established at a conference in Paris in May, 1923, of a "Mixed Commission" (members of the provisional Health Committee of the League, in function August, 1921, to June, 1923, and of the Permanent Committee of the Paris Office), convened at the request of the Council of the League and presided over by the late Dr. Alexander Granville, C.M.G., President of the Sanitary Maritime and Quarantine Board of Egypt. The constitution of the Health Organisation of the League, as drawn up by this Commission, was formally accepted by the Permanent Committee of the Paris Office and the Council and Assembly of the League, and it is embodied, along with various subsequent resolutions of the Council, in the present organic statutes of the Organisation. In addition to a medical staff of the Secretariat, appointed by the Secretary-General, the "Health Organisation" comprises a Health Committee, whose members are appointed triennially and in their individual capacity. This committee is appointed by the Council, which, however, accepts nominations of nine of the members from the Permanent Committee of the Paris Office. The Permanent Committee of the Paris Office is by this instrument also made available for consultation by the League; and its members have the right to receive the League's medical publications and to advise as to the annual programme of work at Geneva. In practice the Medical Director of the League attends or is represented at the sessions at Paris and the Director of the Office International d'Hygiène publique those of the Health Organisation at Geneva. In 1926 other links were created by the use of the Singapore Bureau (to which I refer below), as a regional bureau of the Paris Office for information about epidemics in the Far East, and by an arrangement whereby a weekly statement about infectious diseases, supplied by Governments to the Paris Office under the terms of the International Sanitary Convention, 1926, is transmitted to Geneva and receives general publicity in the "Weekly Epidemiological Records" issued by the Health Organisation.

A consideration of much greater interest is what has been accomplished since we started on the broader road, after the war, both at Paris and at Geneva, and what encouragement we have to do more work on the same lines in future. It is with this that these lectures are mainly concerned.

As in 1921, I am anxious not to seem to claim too much either for the work on which these official international offices are engaged or for the work which they ought to undertake in future. Any suggestion that medicine, always among the most international of the learned professions, should henceforth first look to the League of Nations or any other inter-Governmental office in order to maintain its proud tradition of internationalism would indeed be retrograde. Lister, Pasteur, and Koch were all good patriotic nationals, but it goes without saying that their work was done for and taken by the whole world. In ordinary medical connexions their nationalities trouble us as little as that of the great musical composers. Voluntary and unfettered association with our colleagues in foreign countries and the British Commonwealth of Nations is vital for us. And when medicine and hygiene in the United Kingdom tend to become too insular—as they sometimes do—it is fortunate that we have the publishers and the medical journals to put us in the right way. They have, for our good, an international tradition, all the stronger because they are not officially guided or, in the jargon of to-day, not rationalised. And it is the same thing with the many congresses and conferences on medical subjects which are organised year after year by the profession itself. We all affect to regard them as a trial, but we go to them and we benefit. Governments may assist these conferences—one may mention specially those of France, Spain, Belgium, and Holland as always active in this con-

nexion—and Government aid is a great help to their organisers. But it is assistance with the amenities, and in no sense implies interference with the organisation, objects, or conclusions of the conference. At random, and taking European conferences alone, I have notes of 24 international medical meetings in 1932, and 23 in 1933 down to November. They range from small gatherings with a closely guarded membership, such as the Congress on Urology held in London last year, to larger meetings like the Journées Médicales at Brussels, or the recent Cancer Congress at Madrid, which have lay as well as medical elements. This is in Europe, but we must also take account of similar international meetings in the Americas and Congresses such as those of the Far Eastern Association of Tropical Medicines, which have so wide an influence in spreading knowledge and promoting research all through the East. In fact, if physicians, when they hear international medical work spoken of, think first of their personal association with particular gatherings of this voluntary kind, and of contacts and friendships then established with colleagues from overseas, it would be natural and fitting. Nothing could replace them.

Research workers again, as well as those concerned with certain aspects of public health administration and education, will very properly associate international medical work first and foremost with that great international body, the Rockefeller Foundation.

THE ROCKEFELLER FOUNDATION

If the Rockefeller Foundation is not strictly speaking a body designed to secure international coöperation of the kind with which I am here dealing, it is none the less an international body in the sense that it is one of its principles to distribute its work among all the nations. It is difficult to over-estimate our debt to this institution, and to the idea of the family which founded it, that some of its money profits drawn from every part of the globe should be returned so as to "promote the well-being of mankind throughout the world."

The Foundation, which as at present organised has its headquarters in New York with important branch offices, for example, at Paris and Peiping, succeeded in 1928 the "International Health Board" which had been formed in 1913, and itself arose out of the Rockefeller Sanitary Commission in hookworm in the United States which began in 1909. On the health and medical side it has two main divisions—for international work and for work on the medical sciences respectively. The latter is the more recent development, on which chief emphasis was laid in making the changes of 1928, and itself represents a stage in evolution. Beginning with giving assistance in various ways to particular practical measures of public health in suitable areas and the local demonstration of what can be done locally against particular diseases, the Foundation soon came to extend its efforts to the advancement of medical and public health education. From this it has been led to include in its programme work for the direct advancement of the medical sciences themselves and to methods of subsidising research in a way which Governments are rarely disposed to do. All these activities continue side by side, and their universal character has been maintained. The annual reports of the Foundation give abundant evidence of the large scale on which the sums have been disbursed and the wideness of the geographical distribution of the work, while, for an outline of the Foundation policy in these matters readers should consult "The Rockefeller Foundation: a Review for 1928," by Dr. George E. Vincent, published in the following year.

If reminders of the result of the work in the British Empire were necessary, we have only in London to think of the building of the London School of Hygiene and Tropical Medicine, opened in 1929, or the clinical research professorship at University College, or the assistance given to other medical schools in Oxford, Cambridge, and Edinburgh. The Dominions and India (notably by the assistance given to the All-India Institute of Hygiene and Public Health at Calcutta) furnish plenty of other examples. Teachers and investigators from the British Empire, moreover, are included among the 500 individuals from 48 countries to whom the Foundation annually gives fellowships for study in countries other than their own; while it is common knowledge that many British colonies and possessions are now actively benefiting by research work such as that conducted at the New York and other laboratories into the virus of yellow fever. If I was writing of France, Italy, or China, to take three countries at random, the examples to give would be no less striking.

This is not the occasion to discuss the many different methods by which the Foundation proceeds in the execution of the different branches of its health and medical policy, though its practice of limiting its grants to established bodies, government services, or institutions must be mentioned. In general, the Rockefeller tradition is one of freedom from political ends, international as much as national. It is no part of its programme to get together official conferences of experts from different countries, or to suggest health policies to Governments, in the way which is done by the organisations at Geneva and Paris. Nevertheless, as much of its health work is done through the Government health services, and as its activities leave hardly any region on the map of the world untouched, its indirect influence in securing good international relationship between medical workers is very great.

It is impossible also to consider international organisation in medicine without looking back to the battle of Solferino, to Henri Dunant, and so to the handful of Geneva citizens through whom the International Red Cross Committee was established in 1864. The whole Red Cross movement dates from then and the several international Red Cross Conventions have followed. Memories of Red Cross work in time of war and of the international obligations attaching to that symbol are still with all of us, while since the war there has been a notable development of Red Cross peace-time work on international lines.

THE RED CROSS AND LEAGUE OF RED CROSS SOCIETIES

The International Red Cross Committee continues its work at Geneva, and deals with the fundamental principles of the Red Cross and with the International Conventions from which it derives authority. It is a separate and independent part of the International Red Cross organisation, as defined by statutes adopted at the Thirteenth International Red Cross Conference at the Hague in 1928. Side by side with it now in the International Red Cross Organisation is the peace-time branch of the Red Cross, represented by the League of Red Cross Societies—with the creation of which, in May, 1919, the name of the late Mr. Henry P. Davison is so honourably associated. The membership of the League is restricted to participating national Red Cross Societies, now 58 in number; it has a representative Board of Governors, a small Executive Committee, meeting twice annually, and a Secretary-General, now Dr. René Sand, with headquarter offices in Paris. At present the League's principal peace work, in addition to coördination, lies with relief in times of disaster, popular health education, and the training of nurses. The League of Red Cross Societies was also instrumental in the establishment of the International Hospitals Association, and has taken special interest in matters affecting the welfare of the merchant seaman.

Health Work of the League of Nations

Where then, on lines not covered by the organisations I have described, has the League of Nations come into the picture of international coöperation in health matters? Obviously the Governments which the League represents have no particular reason to compete, or deal otherwise than by friendly unofficial liaison, with international medical congresses, with the Rockefeller Foundation or the Red Cross work. Moreover, it was settled in 1921 that the International

Health Office in Paris should continue, independently of the League, to carry on the functions of an organ which had been established under formal diplomatic agreement (1907). This was an existing body dependent on a committee which consists of technical representatives of Governments on public health questions, available and capable, within the limits of its finance, for taking up the study or regulation of any international questions affecting Government health services.

When one seeks to explain how the Health Organisation of the League, while escaping from most of the dangers of overlapping, supplanting, or superseding the work of other organisations which should be allowed to develop on their own lines, has yet succeeded in making a position for itself to which the world is ready to pay tribute, one comes at once to emphasise the following considerations:—

(1) The wide terms of its charter. By Article 23 (f) of the Covenant the States members of the League have undertaken the duty in general terms to "endeavour to take steps in matters of international concern for the prevention and control of disease."

(2) The decision taken at the earlier Assemblies, and since maintained, that a substantial sum, in recent years stabilised in the region of 1 million Swiss francs (£40,000 at the old exchange rate; the Swiss currency remains on the gold standard), with a generous annual addition from the Rockefeller Foundation, should be allotted each year to the organisation, enabling it to be provided with a considerable medical staff under a Medical Director, who holds one of the highest positions in the Secretariat.

(3) The great post-war extension in State organisation of, or State control over, medical and public health work in almost every country in the world, which has resulted in new demands for aid with the experience of other countries. The official collaboration required is now not only the prevention of particular exotic diseases but something very much wider.

And to these I would add a fourth—namely, an active opportunism, ready to seize upon projects which have not been undertaken before from an international standpoint, to try them out, and gain experience from success or failure. In the health work done at Geneva during its first 13 years attempts to systematise and define what should or should not be done have, fortunately, not been very fruitful. The impulse has come sometimes from the administrator, sometimes from the laboratory, sometimes from the insistence of some particular Government or delegate, and sometimes again, has been essentially due to some political factor which has made it desirable in the interests of the League to show its flag and inscribe international health upon it. Dr. L. Rajchman, who has been the League's Medical Director since 1920, and whose ability is so universally recognised, has never failed to capture or provoke these impulses at a suitable moment, and to make his organisation respond to them. As a result certain lines of activity, arbitrary if you like, have become recognised as a fixed part of the Geneva work; other undertakings have been completed, or it may be dropped or put into cold storage. In other words, it is a young, living, and still growing organism, seeking to learn and do its best to fulfil and do credit to the article of the Covenant which I have quoted.

For proof it is only necessary to look through the large number of reports and publications of the Health Organisation and observe the extensive ground which they have covered. A complete collection, I believe, exists in the library of the College and in one or two other important medical libraries in this country. Since 1931 their systematic collection has been greatly facilitated by putting the reports of Commissions and the expert studies into a Quarterly Bulletin. By taking this Bulletin, along with the records of the sessions of the Health Committee and of the Second Committee of the Assembly (which deals with the Technical Organisations of the League) and a few specially printed reports, such as that of the Singapore Bureau, the Geneva output can be appreciated as a whole.

It is not too easy to classify these activities and select examples, but I may begin with some instances of work in which the League has been able to render a definite service to medicine, and then go on to other matters in which the League has found advantage in using medical and public health knowledge to further its own objects of promoting fellowship between nations.

BIOLOGICAL STANDARDS COMMISSION

Our Therapeutic Substances Act is as recent as 1925, and it was only when that Act, and the regulations made under it, came into operation that we were in a position to exercise effective control over the purity of potency of therapeutic substances which cannot adequately be tested by chemical means. We now accept this control, both for the home product and for products coming from overseas, as part of the natural order of things, and are familiar with the exact and scientific methods by which the regulations have been prepared and are enforced through the National Institute for Medical Research and the central public health departments. But the part played by the international conferences on these questions can hardly be over-estimated. Some years before the enactment of our own legislation it had been evident that the difficulties which we were encountering were also weighing heavily on other countries. The uncertainties about the measure of potency of antitoxic sera, notably those for diphtheria and tetanus, received immediate attention after the war; as also did the need for a better understanding of the tests to be applied to salvarsan and analogous substances. National difficulties in deciding on the admission of these remedies from foreign laboratories and doubts about the sufficiency and efficiency of purely national methods of control, found expression at the Paris Office in 1919 and 1920. It then became clear that it was only by the close association of expert workers in the principal laboratories concerned that any satisfactory agreement could be arrived at either as to tests to be applied or as to the standard substances which should be maintained in particular laboratories for international reference.

Here it was at once realised was a promising ground for the new International Health Organisation of the League, which had sufficient funds at its disposal to organise the necessary conferences and coördinate work in different laboratories. The first trial of this method, especially in relation to the antitoxins I have mentioned, was initiated by a conference in London in 1921, followed by another in Paris in November, 1922. Meanwhile, on the side of therapeutic substances requiring biological tests, another conference was prepared for and held in Edinburgh in July, 1923, when a beginning was made in obtaining a common basis for the measurement of composition, potency, and purity of such substances as thyroid and pituitary extracts, ergot, and digitalis, and

another beginning with insulin. Other conferences have since followed at Geneva (1925), Frankfurt (1928), and London (1931) as well as meetings of groups of workers on special subjects at Copenhagen and elsewhere in between sessions. The report of the London conference of 1931[1] gives a useful review of the whole of the work completed to that date, and the matters then left outstanding, with some new questions like the standardisation of sex hormones, are to be considered at further conferences during the present year. All this varied work of standards has throughout been planned and kept going by a small body of experts which now constitute the "Permanent Commission on Biological Standardisation." Dr. Madsen is the chairman of this Commission, which includes Sir Henry Dale, Prof. Kolle, Dr. McCoy, Prof. Bordet, and Prof. Louis Martin. A collateral conference on the standardisation of vitamins was held at the same time under the chairmanship of Prof. Mellanby.

The Commission on Biological Standardisation thus now occupies a key position in securing reasonable and scientific control over the quality of these essential modern remedies. The British Pharmacopœia, in 1932, in dealing with substances only assayed by biological methods, now includes those alone for which the Permanent Commission on Biological Standardisation has recommended a definite standard of reference, and accepts the principle that no biological method of assay is satisfactory which does not depend on a comparison between the sample to be tested and the standard preparation. The work of providing and distributing samples of these standard preparations in this country is undertaken by the National Institute for Medical Research, and that Institute acts in several cases as the depository of the international standard itself, on behalf of the International Commission. The chief standard vitamins are thus maintained there. Other international standards are kept on behalf of the Commission at designated laboratories at Copenhagen, Washington, Frankfurt, Batavia, and elsewhere.

The spade work and the practical decisions on these different matters fall, of course, on the experts and laboratory workers themselves in their own countries. The part played by the Geneva organisation is the essential one of maintaining continuity and providing the necessary centre on which national results can be focused. By now the medical staff at Geneva has gained much experience in the arrangement of these conferences; in fact each conference brings with it a new experience, which facilitates the progress of a work which must necessarily be continuous and requires a high degree of organisation at headquarters.

INTERNATIONAL STUDY OF "HEROIC" REMEDIES

This experience indeed has lately led to the revival of a similar project—namely, to entrust to the Health Organisation of the League of Nations the duty of arranging for continued expert study of heroic remedies by pharmacologists and chemists. The International Conference on the Control of Heroic Remedies, held in Brussels in 1925, it will be remembered, fixed the quantities of particular potent drugs—morphine, strychnine, cocaine, &c.—in the standard products which find a place in the different national pharmacopœias. There can, however, be no finality either in the quantities and proportions of these substances required in medicine or in the tests applied for their determination; while the need for including new preparations has always to be borne in mind. The matter has still to be considered by the Health Committee of the League, but experience of the Permanent Commission on Biological Standardisation can without doubt be effectively urged in support of the proposal.

[1] League Publication III.: Health, 1931, iii., 10.

WORK ON MALARIA

Malaria was among the first international health questions which the League of Nations was asked to include under the terms of Article 23 of the Covenant requiring it "to endeavour to take steps in matters of international concern for the prevention and control of disease." As the British Empire, with its vast tropical territories in Africa, India, and the Far East, is more concerned with malaria than is any other group of nations in the world, it was appropriate that this country should take the initiative in requesting the League to consider it. As British representative on the League's Health Committee, on the advice of my colleague, Colonel S. P. James, I brought the subject to notice in May, 1923, in connexion with the remarkable epidemic extension of the disease which was occurring in South Eastern Europe. This resulted in the appointment of the Malaria Commission of the League under the presidency of the Italian member of the Health Committee, Dr. Lutrario. That Commission constitutes a body of experts who are well qualified to act as a central agency to which the health administrations of different countries can submit their malaria problems for information and advice, and it has made it its business to collect and analyse information from all parts of the world on the incidence, epidemiology, prevention and control of the disease. Though not in a position to undertake research work itself, it has also stimulated and coördinated national research. At an early stage "study tours" of malarious countries were made by expert members or groups of members of the Commission. During these tours information furnished by local workers and observations made on the spot were examined and discussed by malariologists belonging to varied schools of antimalarial practice and opinion. Holland, Denmark, Jugo-Slavia, Czechoslovakia, Greece, Bulgaria, Rumania, Russia, Italy, Spain, Corsica, Palestine, the United States, and India are some of the countries in which these tours of inquiry have been made.

I have spoken of the opportunism which has determined our lines of work at Geneva; and this certainly was an example of an opportunity seized at the right moment. In the years immediately following the war there were countries, like our own or the Netherlands, in which the former prevalence of malaria had been almost forgotten, but which were in the new position of receiving human carriers in abundance from the malarious war areas, while they still had no lack of indigenous anophelenes to provide the necessary insect carrier. Other countries in Europe seemed, as a result of war and post-war changes, to present the difficult problem of an increased general susceptibility of their population on the one hand, and the introduction of new and virulent strains of the malaria parasite on the other. Then also, there were countries, including new colonies or possessions, which were beginning to organise or reorganise their public health services, and finding how malaria dominated the position. However clearly it seemed to have been proved that particular areas, like the Panama Canal zone, could be freed from indigenous malaria by the systematic and thorough attack on the insect carrier through the suppression of its breeding places, and by protection against the adult anopheline, to advocate a general application of this radical measure to the malarious populations of the world—to the great river deltas, fens and marsh countries, let alone the malarious hill

countries—was a mere counsel of despair. No health authority could be given the staff to do it, no administration could for a moment contemplate the expense, while half-measures on this basis were useless. It was the time, therefore, in the search for practical alternatives and practical policies, to take up wider views of malaria and its epidemiology. Why had malaria practically disappeared from Northern Europe before any of the knowledge we had from Manson and Ross? What is the extent of the natural protection conferred by attacks of malaria in infancy, and what part does natural or acquired immunity play in a malarious district? How is it that mere intensive agriculture, the Italian "bonifications," and other measures for increasing the general welfare and prosperity of the people have by themselves done so much to reduce malaria? These and a host of other questions, like the prophylactic use of quinine, were going through an agitated period; controversies had multiplied, and rigid doctrines were being set one against the other. It was a service then to many countries and Governments to bring their exponents together, not merely to hammer out a least common measure of agreement or a formula, but to confront them with the problems on the spot, under differential conditions, and then see what common advice they could arrive at. It was only when this had been done in a sufficient number of instances that the Commission set itself to the general review of the principles and methods of malaria prevention published in 1927: "Principles and Methods of Antimalarial Measures in Europe" (C.H./Malaria/73), a publication which has proved invaluable by showing the many ways in which malaria can be effectively controlled, and the conditions which should determine their choice in a particular case.

The question whether pure quinine is essential, or is only an expensive medical habit which could be abandoned for other cinchona preparations or mixtures was answered in favour of the latter. The Malaria Commission of the League has responsibility for *Totaquina*, a cheaper product in which all the alkaloids in cinchona bark are present, but standardised to 70 per cent. of crystallisable alkaloids, of which not less than 15 per cent. must be quinine. Totaquina appears in the last edition of the British Pharmacopœia and is now being used for the treatment of malaria in several countries of Europe and the Far East.

And while this work was proceeding two events of outstanding importance in the history of malaria research occurred. The first was the discovery in Germany of synthetic drugs which promise to be more effective antimalarial remedies than quinine. The second was the application in England of the clinical practice of "malariatherapy" and the study of malaria in the human subject under controlled laboratory conditions. These events quickly led to great advances in knowledge and to a radical change of thought and opinion on many aspects of the disease including methods of treatment, control, and prevention. The Malaria Commission of the League had taken no part in those events, but the Commission was there; it had proved its ability in other fields, and it was natural to seek to use it as an organisation through which the new knowledge could be sifted out and brought authoritatively to the notice of all malarious countries. Workers in the several countries where the new researches were being conducted willingly agreed to collaborate in the preparation of an agreed "international" report, with the result that a comprehensive article containing the most recent information available was published in the League's Quarterly Bulletin for June, 1933, under the title "The Therapeutics of Malaria." This comprehensive account of the subject is evidently serving a useful purpose, for it has had to be reprinted and is said to be a "best seller" among League publications. It has, at the right time, met a real want on the part of public health officers in many countries.

Mention should be made of one other matter in which the international machinery of the League has proved useful in dealing with malaria—namely, by aiding the establishment of different centres of courses of study for junior medical officers, of any nationality, who are about to undertake antimalarial work in the public health departments of malarious countries.

"APPRAISAL" IN OTHER DISEASES

The system of "appraising" data from different countries has been applied to certain other disease problems. For some of these the Secretariat has been so fortunate as to obtain the services of some one man to give the time and trouble necessary to an elaborate survey of material obtained from many countries. Dr. McKendrick's reports on the results of antirabic treatment in different parts of the world is a case in point, as also are the long and careful studies made by Dr. E. Burnet resulting in his monographs on international practice for the control of leprosy and tuberculosis. In other instances a system of "expert committees" has been followed, each with a rapporteur to do the main work. Reports on infant welfare and maternal mortality have been done in this way. In this connexion the work done, or now in hand, in relation to syphilis and cancer may be mentioned in a little detail.

WORK ON SYPHILIS

I refer below to the action initiated at the International Office of Public Health at Paris in 1920 to secure the agreement which has since been made between maritime countries for the free treatment of venereal diseases at the principal seaports. Part of this scheme was that the merchant seaman, on visiting a seaport clinic, should be given a personal card with entries, intelligible at the clinics of other ports in other countries, showing his diagnosis and the treatment he had received. Naturally, in the case of syphilis, this meant entering the results of his serological tests. At once, however, questions arose about the notation to be employed for the results of the Wassermann test and about the significance of the test when done in different ways. The same questions came up at the conference on the welfare of the Mercantile Marine at Copenhagen in 1921, when the practical application of the proposed international agreement was being considered. These were difficulties universally felt, going much further than the sailor at the port clinic. A particular clinician who was used to a particular serological notation employed by himself or by the pathologist with whom he habitually worked, could, of course, use the +, −, or ± signs in any convenient way without troubling about the actual or relative value of these signs; and he could multiply, vary, or qualify his symbols as he chose. But what was another man, out of touch with him, to make of them? Then, too, came the question of the influence of minutiæ of laboratory practice on the results of the Wassermann test, while, as the study of the subject went on, the advantages and drawbacks of substituting flocculation tests (Sachs Georgi, Sigma, Meinicke, M.T.R.) for Wassermann methods could not be ignored. To realise the practical importance of a

general understanding on all these matters one had only to consider how the welfare and the treatment of all the many cases reported to be on the serological borderline were being quite arbitrarily governed by the tester, his methods, and his notation.

These matters were taken up at successive expert conferences arranged for this purpose by the Health Section of the League in London in 1921, in Paris in 1922, and in Copenhagen in 1923. The last of these was a working laboratory conference lasting for some weeks at which representatives of eight laboratories in Austria, Belgium, Denmark, France, Germany, and Great Britain met together and tested the same 500 specimens of serum by a series of different serological tests, each in the way preferred by the experimenter. The findings of this conference as to essential details of the tests are well known, since the standard notation for reporting results which it recommended is now in general use. In 1928 the subject received further attention at a second laboratory conference in Copenhagen, on an even larger scale, cerebro-spinal fluids as well as serums being tested; there has also been another important laboratory conference of the same kind in South America—in Montevideo in 1930. The whole ground covered by these conferences was reviewed as recently as October, 1932, in a report by Jadassohn, Gougerot, and Harrison, drafted by Dr. Moerch, of Copenhagen, and published in Vol. 1, No. 4, of the Quarterly Bulletin of the Health Organisation of the League. The rules therein recommended have since received a wide acceptance. It is beyond question that these laboratory conferences have been of great value in promoting improvements in serum tests for syphilis and helped to a more judicious use of them in practice all over the world. For this result special recognition should be given to the President of the Health Committee, Dr. Madsen, whose laboratory at Copenhagen has been designated by that committee as the central laboratory for reference in these matters, and to the indefatigable efforts of Colonel L. W. Harrison in this country, from the beginning of the inquiry, to maintain it at the highest level of precision in its work and exactness in its conclusions.

As with malaria, so in this case one piece of international expert coöperation led to another. This close association of syphilologists for the purpose of dealing with serum tests which are vital for modern treatment could hardly escape leading to mutual consideration of modern treatment itself. There is the greatest diversity of opinion on the amount of different remedies necessary to eradicate syphilis; treatment suffers, and may even be discredited, by these divergencies. Could not something be done by pooling knowledge? The Health Committee was persuaded to accept the challenge, and collect from a large number of countries individual case records made out on a standard plan showing stage of the disease, amount of treatment, and serum reactions before and after treatment. It sounds—indeed when first proposed it was thought to be—a fairly simple thing to do. In point of fact, the difficulties have proved considerable. With the best will in the world, busy clinicians and institutes do not find it easy to maintain special books and records over a long period; they must be fully satisfied that the analysis which results from combining their work with others will be worth having; and they are well aware that magnitude of data does not necessarily compensate for inaccuracy or error. Colonel Harrison by his energy obtained over 3000 individual records from clinics in England and Wales, and by 1932 he had seen to their preliminary examination and transmitted them to the centre chosen for global analysis under the advice of the expert Subcommittee of which he is a member. Other countries have also responded on a large scale, and it is estimated that in all something like 30,000 case records will have been sorted out for consideration by the Subcommittee when it meets this year.

RADIOGRAPHIC DIAGNOSIS OF GASTRIC AND DUODENAL ULCERATION

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(WITH ILLUSTRATIONS ON SPECIAL PLATE)

Using the opaque meal examination as it is generally carried out, it is often difficult or impossible to demonstrate gastric or duodenal ulceration on the radiogram. To H. H. Berg is due the credit for elaborating a technique by which one can show conclusively not only the anatomical condition of an ulcer but also in most cases the consecutive changes of ulceration.

In 1913 Forssell [1] published his researches into the physiology and pathology of the mucous membrane of the gastro-intestinal tract, and it is upon this basis that the technique has developed. In 1921 Akerlund [2] enunciated the principle of screen control in the radiography of the duodenum, and in 1927 amplified his method by the addition of compression. In 1925 Berg [3] applied the work of Forssell and Akerlund to a detailed study of the pathological gastric and duodenal mucous membrane, and by developing and perfecting the "aimed dosed compression" exposure technique has raised the radiological diagnosis of ulcer to a degree of accuracy and refinement hitherto unobtainable. Among others, his former pupil Albrecht [4] has amply proved the great value of the method.

THE METHOD

The "aimed dosed compression" exposure method is an attempt to demonstrate radiographically the mucous membrane of the stomach and duodenum after it has been coated with as thin a layer as possible of opaque meal. Varying degrees of compression—"dosed compression"—are applied over the stomach and duodenum to show the details of the mucous membrane to the best advantage, and at any particular moment a permanent record of the screen image is obtained by the immediate exposure of a film—"aimed exposure."

In order to carry out the method certain refinements in apparatus are necessary. A tilting couch is essential to allow of the examination of the patient in any position between the Trendelenburg and the erect. Some means of applying dosed compression must be available, and a small metal cylinder, 4 in. in diameter, with an aluminium cap, is used for compression over any particular area. It must be possible to change-over from screening to radiography in a fraction of a second.

After the preliminary examination of the thorax and abdomen the patient takes a small mouthful of the opaque meal. The examination is best begun with the patient recumbent. The progress of the meal down the œsophagus is watched and any apparent departure from the normal confirmed by aimed exposures. The entry of the meal into the stomach is carefully observed, and by tilting and turning the patient the fundus is thoroughly examined.

By bringing the couch gradually towards the erect position, the meal is allowed to trickle slowly down the stomach, the palpating hand guiding and distributing it over the mucosal surface. The stomach and duodenum are systematically explored under dosed compression. On the least suspicion of abnormality aimed exposures are made. It is only after the examiner has thoroughly satisfied himself both by screen examination and by radiograms as to the anatomical condition of the stomach and duodenum that the patient is allowed to drink the full meal. The function of the stomach is then investigated by the ordinary method.

No fixed routine can be laid down which will meet the needs of every case. A highly cultivated screening technique is essential, and it is obvious that only those who are experienced in screening and who have the necessary apparatus can make the most of Berg's aimed dosed compression exposure method.

THE MUCOUS MEMBRANE

For the proper appreciation of the method a thorough knowledge of the radiographic appearances of the normal gastric and duodenal mucous membrane is required.

If a small amount of opaque meal is taken into the fasting stomach and spread over its surface, radiographic examination shows that the mucous membrane is thrown into folds. Although great variations occur in the course of the folds, certain constantly recurring configurations, which are more or less typical, can be distinguished. The radiographic picture of the gastric mucous membrane bears a very close resemblance to the naked-eye appearance of the now classical anatomical specimen of Elze, a specimen obtained shortly after death.

From the fundus, where they are arranged as a complicated network, the folds run longitudinally through the body of the stomach. As a rule, two to four straight folds can be seen along the lesser curvature, constituting the "gastric street" or "pathway of Aschoff." On the greater curvature the arrangement of the folds commonly gives a dentate appearance because folds running from the anterior to the posterior wall are seen at right angles. At the incisura angularis the longitudinal folds tend to become curved or spiral towards the greater curvature. Towards the pylorus the folds converge in a radial manner and are continuous with the folds visible on the pylorus itself.

In the first part of the duodenum the folds are arranged longitudinally, as in the stomach (Fig. 1 on Plate), although a transverse arrangement may be visible during contractions.

The mucosal folds are not fixed anatomical structures but vary in arrangement, thickness, and width, with the needs of digestion. Forssell holds that the two main factors governing the fold formation are the variations in the fluid content of the mucosa, and the action of the muscularis mucosæ under the control of its nervous regulating mechanism, the Meissner plexus.

RADIOGRAPHIC SIGNS OF ULCER

The radiographic signs of ulcer are divisible into two groups. 1. The *direct* signs consist of the ulcer niche itself, and the late results of ulceration (organic hour-glass contraction, pyloric stenosis, and duodenal deformities). 2. The *indirect* signs are indicative of disturbance of function. A diagnosis of ulcer on indirect signs should not now be made; only the direct signs are of diagnostic importance. The radiologist must show the ulcer niche or its results on the radiogram; no more—but no less—should be expected of the radiological examination. We propose to confine our attention to the direct signs of ulceration. The interpretation and significance of the indirect signs will form the subject of a further paper.

The ulcer niche, first described by Haudek in 1910, is our most valuable diagnostic sign and is pathognomonic of ulcer. Its demonstration is certain evidence of loss of substance from ulceration. If possible it should be demonstrated in two planes, "en face" and "en profile." With ulcers on the lesser curvature of the stomach this is not generally possible, such ulcers being seen in the postero-anterior view in profile.

The "en face" niche—that is, the niche as seen from the front—is as a rule only visible after a small quantity of the meal has been taken, being hidden or indistinct when the stomach is distended with the meal. Dosed compression over the ulcer area will displace the contrast medium revealing the niche and the adjacent mucous membrane in relief (Fig. 2). Such an "en face" niche is called by Berg a "relief" niche.

The recent ulcer, seen "en face," shows as a sharply defined round or oval punched-out area surrounded by a zone of inflammatory œdema. As healing takes place the "en face" niche loses its definite outline, the circular inflammatory zone disappears, the niche becomes smaller and irregular, and there may be a radial convergence of the mucosal folds towards it (Fig. 9). Finally, when complete healing takes place, a star-shaped scar replaces the niche.

The niche having been located "en face," the patient is slowly turned under screen control until the best view of the niche is obtained in profile (Figs. 2 and 3, 9, and 10). The profile niche varies greatly in appearance, being cup-shaped in the more recent ulcers (Fig. 4), and thorn or funnel-shaped in the more chronic forms (Fig. 6). On either side of the niche there is a concave indentation of the adjacent profile. This indentation corresponds to the circular zone of inflammatory œdema surrounding the "en face" niche (Figs. 9 and 10). It is the result of œdematous swelling of the surrounding mucous membrane, of infiltrative thickening of the submucosa, or of scar-tissue formation and resultant contraction. The concave indentation on either side of a profile niche is an essential accompaniment of all ulcer niches.

Berg stresses the importance of screening and of radiography in the most varied positions in order to show the niche to the best advantage and to reveal its various characteristics. Figs. 13 to 16 show how necessary this is, and how in the case illustrated it was not until the almost lateral position was reached that it was possible to demonstrate the penetrating nature of the ulcer on the anterior wall of the duodenum (Fig. 16).

Care must be exercised in estimating the depth of an ulcer because the swelling of the mucous membrane as seen in profile may make it appear much deeper than it really is. It must be remembered that the radiogram shows the stomach and duodenum as seen from the inside, and that the outer view as seen at operation may be quite different. An ulcer

shown radiographically with marked indentation of the adjacent profile may not be seen or felt from the serous side, and will be seen only when the stomach or duodenum is opened. Especially is this true of ulcers situated on the posterior wall, above all if these are situated distally in the first part of the duodenum. If some time elapses between X ray examination and operation it may be found that the operative and the radiological findings do not agree. Disappearance of the mucosal swelling and rapid scarring may have taken place in the interval, especially if medical treatment has meantime been carried out. When there is a considerable interval it is advisable to make a further radiological examination a day or two before operation to determine the presence and condition of the ulcer.

The penetrating nature of an ulcer must be diagnosed with caution. It is sometimes possible to demonstrate a narrow channel between the stomach or duodenum and the accessory pocket (Fig. 16). Many penetrating ulcers, however, will show no communicating channel (Fig. 11). Similarly the presence of a gas-bubble in a niche, or the differentiation of its contents into a barium layer, a secretion layer, and a gas-bubble, while suggestive of penetration, is by no means pathognomonic. A similar appearance may be found with an ulcer confined entirely within the gastric wall. In favourable cases the aimed dosed compression exposure method will reveal the changes resulting from penetration. The mucous membrane may show a radial pointing of its folds towards the niche, and the folds may be bent sharply away from the normal longitudinal direction sometimes at right angles (Fig. 7). If in addition there is definite fixation of the stomach or duodenum at this point, as determined by manipulation under the screen, the penetrating nature of the ulcer is clear. If the pyloric portion of the stomach is projected in the left anterior oblique or left lateral position, there is normally a perspective foreshortening. The absence of foreshortening indicates fixation of the posterior wall. A similar positioning of the first part of the duodenum shows normally a perspective elongation. If, however, the posterior wall is fixed this elongation is not apparent. These findings, associated with a demonstrable niche, make it certain that there is penetration.

Occasionally it may be possible to show the perforating nature of an ulcer. Fig. 4 shows a niche with an accessory pocket, and in Fig. 5 the same niche is shown with maximum dosed compression applied. At operation it was found that the ulcer was on the point of perforation.

Unless a niche shows the typical appearances either "en face" or "en profile," or better still in both views, there is considerable doubt as to its being a true ulcer niche. A deposit of opaque meal which does not fulfil these requirements must not, without re-examination, be regarded as due to the presence of an ulcer.

In spite of every technical improvement and of the most careful and skilled examination a small proportion of ulcers will still escape detection. It is evident that no help can be expected radiologically in the diagnosis of those ulcers which are so small and superficial that they will not retain the opaque meal. Berg holds that after a recent hæmorrhage it may be possible to demonstrate the niche, because the crater may be filled as the result of coagulation or thrombosis. Forssell holds that the mucous membrane, by virtue of its power of independent movement, may temporarily close the lumen of the niche, so that thorough palpation is necessary in order to force the opaque meal into the crater.

The modern radiological demonstration of the mucous membrane can offer no help in the differentiation of a simple chronic ulcer from a carcinomatous ulcer, unless the adjacent mucosa shows the gross changes indicative of malignancy. An ulcer which is macroscopically benign, and in which the presence of carcinoma is revealed only by histological examination, will show the radiological characteristics of a simple chronic ulcer.

The diagnosis of an ulcerating carcinoma from a simple ulcer may be difficult. In the former the niche is more irregular and does not show the definite characteristics associated with niche formation, either "en face" or "en profile." As seen "en face," it tends to have the features of a profile niche. In the profile view the smooth concave indentation seen on either side of a simple niche is replaced by an irregular moth-eaten filling defect. One has the impression that something has been taken away from the outline of the stomach, whereas a simple ulcer appears to be added to the outline. In the majority of cases the demonstration of neoplastic mucosal changes in the immediate neighbourhood will leave no doubt as to the nature of the lesion.

Certain radiological appearances may be misinterpreted as the niche of a simple ulcer. Occasionally perigastric adhesions will produce a small boss in the profile view and simulate a niche. There is, however, no concave indentation of the adjacent profile, which as we have seen is an essential accompaniment of all ulcer niches, and normal mucosal folds will be demonstrable in its immediate neighbourhood. Duodenal and jejunal diverticula and the rare diverticula of the stomach may be mistaken for ulcer niches. The demonstration of radiating folds in the stalk of a diverticulum is pathognomonic. A peristaltic wave, because of its changing position, should never be mistaken for a niche. Calcareous opacities will be projected away from the gastric and duodenal contour by examining the patient in various positions.

HOUR-GLASS CONTRACTION

Radiological examination is the only certain means by which organic hour-glass contraction can be diagnosed. Aimed dosed compression exposures show a permanent abnormal direction of the mucosal folds at the site of contraction, the folds running obliquely as if associated with some degree of rotation of the proximal upon the distal sac. A chronic ulcer is always associated with it (Fig. 8).

Organic hour-glass contraction, as seen in the specimen, is never so marked nor so extensive as it appears from the radiological examination of the filled stomach, the degree and extent of the constriction being accentuated in the latter by the additional spasm which is present. Aimed dosed compression exposures show more truly its real characteristics, by resolving the contraction into its organic and spastic components.

The differentiation of organic from spastic hour-glass contraction is a matter of therapeutic importance. With the minimal filling of the stomach, as practised in the Berg method, spastic phenomena are much less common than with distended filling, and the demonstration of the normal mucosal relief such as accompanies spasm at once differentiates it from the organic lesion. It is also possible to distinguish a simple organic from a malignant hour-

glass contraction. In the latter the line of contraction is usually in the long axis of the stomach, and the stiff, hilly, irregular relief, so characteristic of neoplasm, will be seen.

PYLORIC STENOSIS

Pyloric stenosis is the commonest and clinically the most important of the late results of ulceration. It may also result from new growth, simple hypertrophic stenosis, and adhesions.

In a well-marked case the stomach is dilated and gastric secretion may be seen during the preliminary screen examination. The opaque meal falls directly through the secretion to the bottom of the stomach and collects at the lower pole in the form of a half-moon. There is delay in the evacuation of the gastric contents, varying with the degree and duration of the stenosis.

In the earlier cases the demonstration of a duodenal or pyloric niche or of characteristic neoplastic changes in the pyloric region by aimed dosed compression exposures will determine the primary cause of the stenosis. Such differentiation is of course impossible in those cases where in spite of manipulation, waiting, and prolonged observation on the screen, none of the opaque meal is seen to pass through the pylorus.

DUODENAL DEFORMITIES

Deformity of the first part of the duodenum or "duodenal cap" may be produced by spasm from an extra-duodenal lesion, by spasm and mucosal swelling, or spasm and cicatricial contraction associated with ulcer, or by contraction of the scar-tissue of healed ulceration.

A duodenal ulcer confined entirely to the mucosa may heal without producing a demonstrable radiographic deformity. In the more chronic ulcers, where the deeper layers of the duodenum are involved and where there is always some fibrosis, a demonstrable radiographic deformity will always be present, even although the ulcer has completely healed. Thus it is obvious that although duodenal ulceration, particularly the more chronic forms, is often accompanied by deformity of the cap, a deformed cap by no means implies that ulceration is present.

The differentiation of these deformities is rarely possible by the ordinary methods of radiological examination. The exact nature of the deformity can however be definitely distinguished by the aimed dosed compression exposure method. Niche formation is the only radiological sign which justifies a radiological diagnosis of ulcer. A normal duodenal mucosal relief is evidence that the lesion is extrinsic. A deformed cap with demonstrable scarring but no ulcer niche is the result of healed ulceration. Fig. 12 shows a deformed duodenal cap with scarring from healed ulceration but no niche formation.

SUMMARY AND CONCLUSION

Berg's aimed dosed compression exposure method is the most perfect method of examination at present available for the diagnosis and investigation of gastric and duodenal ulceration. By its means the fleeting image of the screen is made permanent on the radiogram.

Only the demonstration of the ulcer niche on the radiogram warrants a radiological diagnosis of the presence of ulceration. Every niche should if possible be shown in two planes, and must satisfy the known anatomical and pathological requirements of niche formation.

In a large proportion of cases it is possible to show conclusively the perforating or penetrating nature of an ulcer.

The method is invaluable in the diagnosis of duodenal ulceration and in the differentiation of the duodenal deformities. No longer is it necessary to consider the indirect radiological signs in arriving at a diagnosis of duodenal ulcer. In almost every case it is possible to demonstrate the ulcer niche.

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LEGENDS TO ILLUSTRATIONS ON SPECIAL PLATE

FIG. 1.—Aimed dosed compression exposure showing: (*a*) radial convergence of mucosal folds towards pylorus; (*b*) the pyloric folds; and (*c*) the longitudinal arrangement of the mucosal folds in the first part of the duodenum.

FIG. 2.—Postero-anterior view of the stomach, showing "en face" niche with convergence of mucosal folds to niche.

FIG. 3.—Same case. Oblique view, showing profile niche.

FIG. 4.—Perforating niche on lesser curvature of stomach, showing small accessory pocket.

FIG. 5.—Same case, with maximum dosed compression applied, showing ulcer crater. Note absence of reactive changes (convergence of mucosal folds) showing that the ulcer is recent. The patient gave only two months' history of indigestion.

FIG. 6.—Chronic ulcer on lesser curvature near cardiac orifice, showing convergence of the mucosal folds.

FIG. 7.—Ulcer of posterior wall of stomach penetrated into the pancreas. The mucosal folds are pointing radially towards the niche and are bent sharply away from the normal direction. The radiogram shows the accompanying pyloric spasm.

FIG. 8.—Aimed dosed compression exposure of organic hour-glass contraction. (*a*) Points to chronic ulcer in the scar-tissue; (*b*) points to site of contraction.

FIG. 9.—Aimed dosed compression exposure of duodenal cap, showing "en face" niche with surrounding inflammatory zone, and radial convergence of mucosal folds towards niche.

FIG. 10.—Same case, showing profile niche with concave indentation of adjacent profile corresponding to inflammatory zone surrounding the "en face" niche.

FIG. 11.—Niche on posterior wall of first part of duodenum penetrated into pancreas.

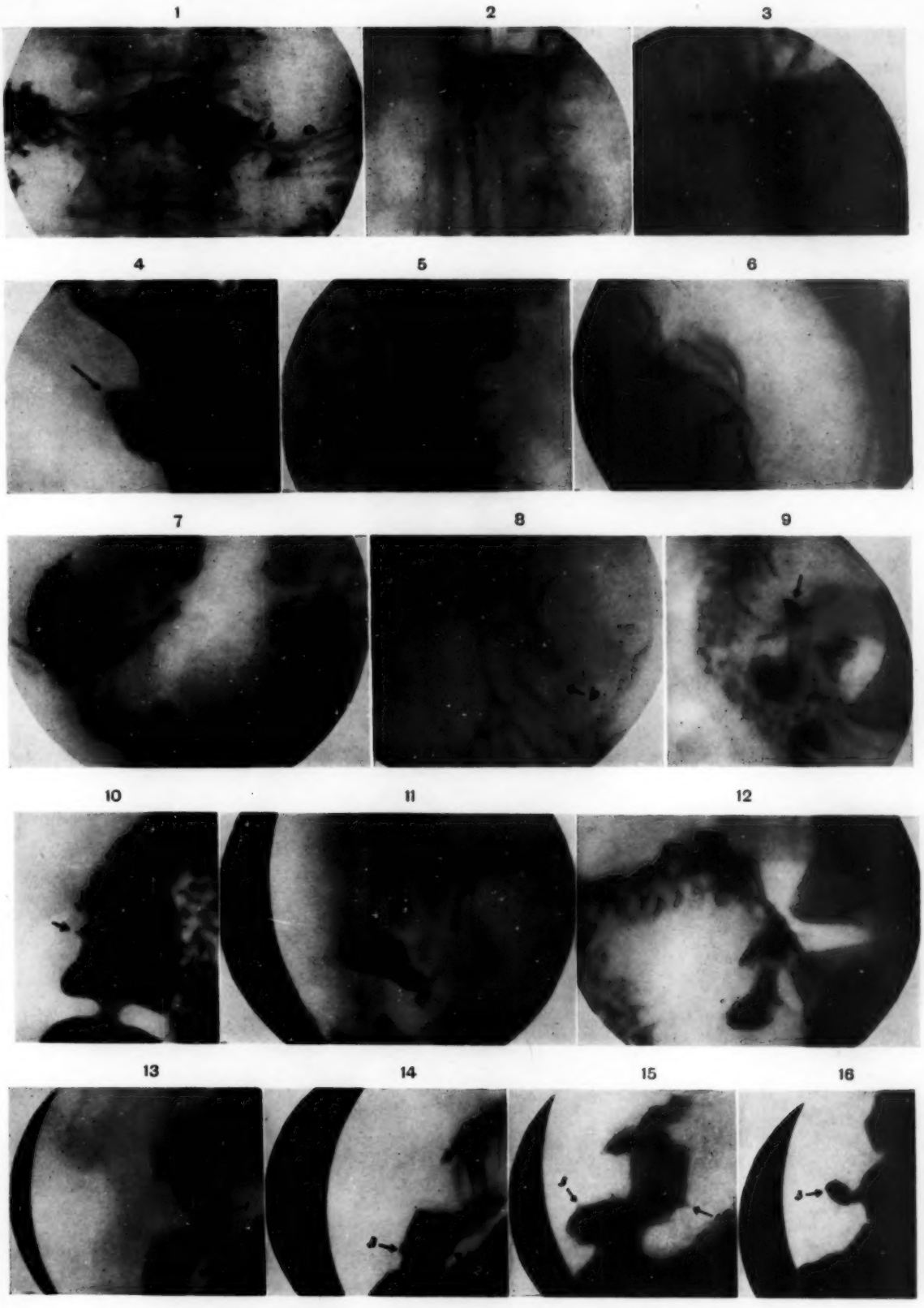
FIG. 12.—Aimed dosed compression exposure of deformed duodenal cap. No ulcer niche.

FIG. 13.—Aimed dosed compression exposure niche in middle portion of first part of duodenum (1) with hour-glass contraction at same level. Niche on posterior wall immediately distal to pylorus (2).

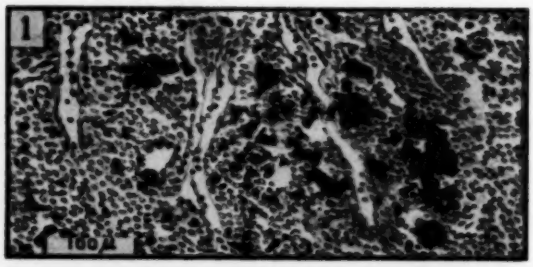
FIG. 14.—Same case, with patient slightly more rotated, showing at hird niche, situated on the anterior wall immediately distal to pylorus.

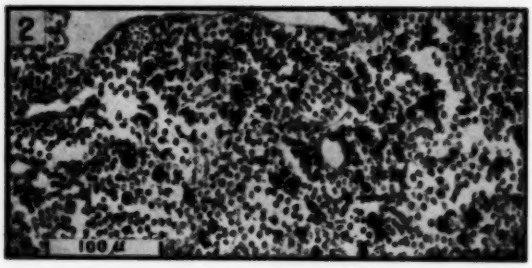
FIG. 15.—Same case at different degree of rotation, showing niches 1 and 3.

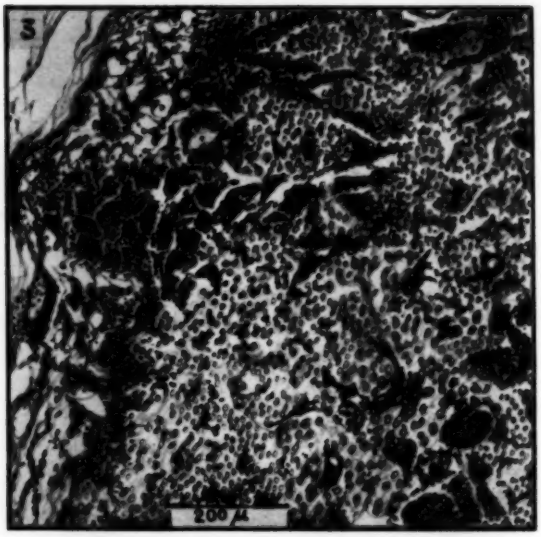
FIG. 16.—Same case (patient almost lateral), showing penetrating nature of ulcer on anterior wall. The inflammatory zone in the region of the ulcer is well seen, as is also the communicating channel and the accessory pocket in the liver.

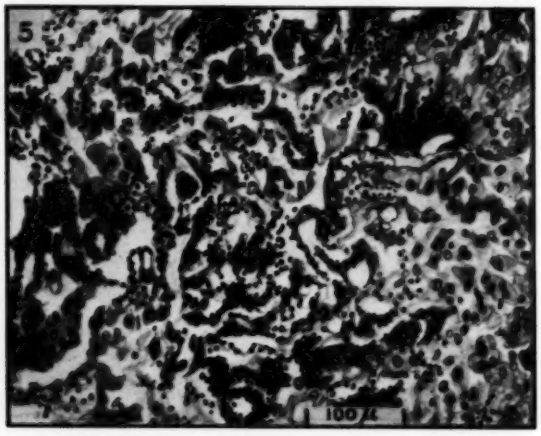


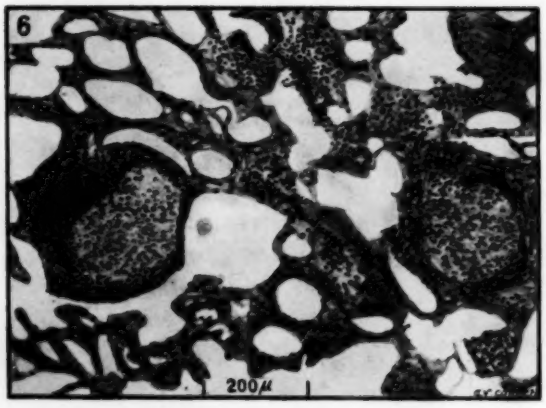
DRS. CORDINER and CALTHROP: RADIOGRAPHY OF PEPTIC ULCERATION

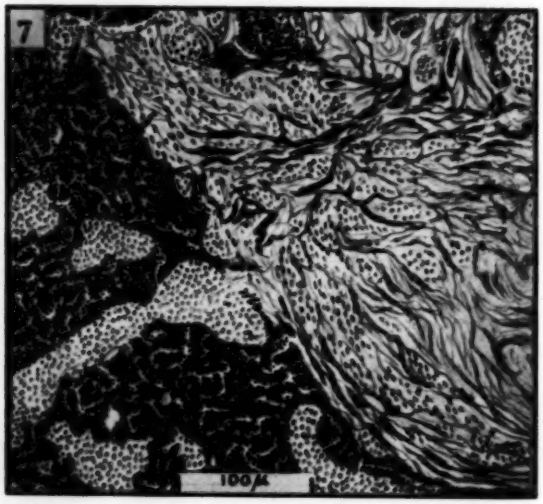












Prof. KETTLE: THE DETECTION OF DANGEROUS DUSTS

THE DETECTION OF DANGEROUS DUSTS

By E. H. Kettle, M.D., F.R.C.P. Lond.

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(WITH ILLUSTRATIONS ON SPECIAL PLATE)

It is highly important that we should be able to distinguish from among the dusts that occur in so many industrial occupations those which are capable of causing pneumoconiosis.

The inhalation of particulate matter may affect the lung in two ways. It may produce fibrosis of the organ of such a degree as to be incompatible with health or even life; and it may modify unfavourably ordinary infective processes. Both these reactions must be considered in estimating the dangerous potentialities of any particular dust, for they are not necessarily manifestations of the same property. The obvious way to determine whether a substance is capable of affecting the human lung in these ways is to test its action on the lungs of animals, but this method is not altogether satisfactory for it is laborious, expensive, and, above all, time consuming. Whatever the technique employed for the introduction of the dust into the lungs, all who have worked on experimental pneumoconiosis are agreed that the end lesion, the characteristic fibrotic nodule, cannot be produced in a few days or weeks, but only in periods measurable in years rather than months, and this makes the method of little value as a practical test.

I have shown [1] for several of the substances which are common constituents of occupational dusts that they may be divided into two groups, the active and the inert, according to their behaviour when injected into the subcutaneous tissues, and that this grouping corresponds with clinical and industrial experience. The active dusts cause an acute inflammation with necrosis of tissue and subsequent fibrosis, whereas the inert dusts give rise to nothing more than a mild and transient reaction. Further, if animals in which such lesions have been produced are infected intravascularly with tubercle bacilli, clear evidence is obtained that the active dusts determine a local settlement and proliferation of the bacilli out of all proportion to what is seen in the tissues generally and in the reactions surrounding the inert dusts. This technique provides a method for testing the capacity of a dust to modify an infection; it is perhaps less legitimate to claim that it tells us whether the same substance can produce fibrosis of the lung, for there is an obvious difference between the injection of a substance into the tissues, with all the trauma this involves, and its introduction into the lungs by the natural routes.

The action of dusts on the tissues may, however, be studied in another way which is free from this objection. It has been shown that particulate matter suspended in normal saline may be injected directly into the lungs through the trachea without producing undue trauma to the pulmonary tissues.[2] Particles introduced into the lung in this way are picked up by phagocytes just as are the particles of dust inhaled in the air, and in due course some of the dust containing phagocytes reach the extra-pulmonary lymph nodes. It is well recognised that in human silicosis the earliest lesions are found in the root glands as the result of this process, and the same thing occurs in experimental pneumoconiosis. And it does not matter how the dust reaches the lungs, for although the mode of introduction may possibly have a bearing on the pulmonary lesions, it is obvious that it can have no influence on the glandular deposits which are produced by entirely natural means.

In the course of experiments carried out during the last two or three years I have found a striking difference in the reactions occurring in the extra-pulmonary lymph nodes according to whether the material introduced into the lungs was what I have termed an active dust or an inert one. If an inert dust is injected into the lungs a certain proportion of it is carried by phagocytes to the pulmonary lymph nodes. After a time the phagocyte dies and undergoes lysis, depositing its burden in the substance of the gland where it remains without causing any tissue reaction and without exciting the attention of other phagocytic cells. If the dust is active, however, an entirely different reaction takes place. No sooner is it liberated by the death of the phagocyte than it is ingested by fresh cells which appear in such numbers as to disorganise completely the structure of the node. This activity persists, and in time collagen fibrils begin to appear between the cells. The deposition of collagen is not as a rule uniform throughout the gland, but tends to be most intense in the centres of the larger collections of dust cells. It is progressive and eventually proceeds to the formation of the characteristic acellular nodule, though this may take a year or more to develop. It is, however, quite unnecessary to wait for the end-lesion to form in the lymph nodes before arriving at an opinion as to the nature of the dust; within three months a microscopic examination of them will reveal such significant changes as to make the diagnosis possible.

The distinction between the two types of dusts is demonstrated in the following groups of experiments which I have selected from my material:—

Series 1.—A sample of iron-coated silica which previous experience has shown to be an inert dust [1] was injected into the lungs of a group of guinea-pigs; 20 of the animals died or were killed at periods between 82 and 700 days after the injection. The lungs contain plenty of the dust, but it has excited no reaction whatever. The pulmonary lymph nodes were examined in 10 of the animals; they show a considerable deposition of dust, but no cellular activity and no fibrosis (Fig. 1).

Series 2.—In this experiment the dust used was wellingtonite, another inert substance; 18 animals survived

LEGENDS TO ILLUSTRATIONS ON SPECIAL PLATE

FIG. 1.—Section of a pulmonary lymph node of a guinea-pig killed 702 days after the intratracheal injection of iron-coated silica. The dust has been deposited in the gland and has excited no reaction.

FIG. 2.—Section of a pulmonary lymph node of a guinea-pig 467 days after intratracheal injection of wellingtonite (aluminium oxide). The dust is inert and causes no reaction.

FIG. 3.—Section of a pulmonary lymph node from a guinea-pig killed 236 days after intratracheal injection of crystalline silica. The dust has excited an active histiocytic reaction.

FIG. 4.—Section of a pulmonary lymph node from a guinea-pig killed 477 days after the intratracheal injection of finely powdered flint. The reaction has proceeded to the stage of the production of fibrous nodules.

FIG. 5.—Section of a pulmonary lymph node from a guinea-pig 236 days after the intratracheal injection of kaolin. The dust is active and is causing a pronounced cellular reaction.

FIG. 6.—Section of the lung of a rat kept in captivity in a gold mine for two and a half years. There are early cellular nodules, but these have not yet proceeded to fibrosis.

FIG. 7.—Section of a pulmonary lymph node from the same rat; the cellular reaction has advanced to the stage of fibrosis.

for periods between 32 and 467 days. These lungs contain dust, but show no reaction, and the pulmonary lymph nodes which were examined in 8 of the 18 cases show a copious deposition of dust but no fibrosis or cellular activity (Fig. 2).

Series 3.—In this experiment the dust used was a chemically prepared sample of crystalline silica, the average-sized particle being between 1 and 3 μ. The pulmonary glands of 11 guinea-pigs which survived for periods from 94 to 726 days after the injection were examined. They all show an active macrophage reaction (Fig. 3), and two of them from the animals surviving for the longest period show nodular fibrosis. The lungs in these animals show plaque formation and cellular nodules, but no nodular fibrosis.

Series 4.—The material used in this experiment was a sample of finely ground flint; 75 per cent. of the particles measured 0·8 μ or less; 26 animals survived for from 72 to 477 days after the injection; the lungs were examined in all of them and the pulmonary glands in 20. The lungs all show an active histiocytic reaction, and in some of them there is a varying amount of fibrosis of the infective type. In two of them killed 477 days after the injection there is definite, though early, nodular silicotic fibrosis. All the glands show an active cellular reaction, and in 4 of them examined 417, 469, and 477 days after the injection, there is pronounced fibrosis of the silicotic type (Fig. 4).

These experiments bring out quite clearly the difference in the reaction induced in lymphadenoid tissue to active and inert dusts. They are far from exhaustive, for though they have been supplemented by observations on other dusts I have not tested out systematically a large series of substances; but the results are so clear-cut, and correspond so well with those obtained by other methods of investigation, that it seems reasonable to conclude that lymphadenoid tissue reacts fairly specifically to the two main types of particulate mineral matter, and should prove a valuable test tissue for the detection of dangerous dusts.

An interesting application of the test is seen in a series of animals treated with kaolin. This is a silicate of aluminium and there is no very definite evidence that it constitutes an industrial hazard, though I have met with one case of human pneumoconiosis apparently due to it; experimentally, however, it appears to be an active substance.[1 2] The pulmonary glands of seven guinea-pigs which survived for from 163 to 505 days after the injection of this dust into the lungs all show an active reaction, though this has not proceeded to actual fibrosis (Fig. 5), and a very similar reaction is present in the lungs.

It will be noted that in the experiments recorded the lungs reacted actively to the dusts which produced changes in the lymph nodes, and a microscopic examination of them gives quite satisfactory evidence that wellingtonite and the sample of iron-coated silica worked with are inert and harmless dusts, whereas kaolin and flint are active and harmful. If the pulmonary lesions were always as distinct there would be no need to look elsewhere for our information; but, as Haynes has shown,[4] dusts which have never been regarded as dangerous may cause cellular reactions in the lungs of animals indistinguishable from the early lesions produced by silica and other substances undeniably capable of causing pneumoconiosis; and I have myself seen pleural drift, plaque formation and a moderate degree of fibrosis, that is, the accepted signs of an incipient pneumoconiosis, with such an inert substance as carbon (Indian ink).

The danger of placing reliance on anything but unequivocal end-lesions in the lung is shown very well in experiments with iron-coated silica. The injection of this substance into the lung excites an immediate cellular response; the particles are engulfed by single and giant phagocytes and the appearances are those of an active pulmonary reaction. But in a few weeks the signs of activity pass off; much of the dust is now lying free in the alveoli, and there is nothing to suggest a subsequent fibrosis. A further advantage which the lymphadenoid tissue has over the lung when one is testing out dusts is the relative rapidity with which recognisable lesions develop in it. This is well seen in material kindly sent me by Dr. Andrew Watt and Dr. J. Pratt Johnson, of Johannesburg, from rats which had been kept underground in one of the Rand mines. The lungs (Fig. 6) show early cellular lesions but no trace of fibrosis, but the pulmonary lymph nodes show not only the characteristic cellular reaction but actual fibrosis (Fig. 7).

I have no exact information as to the earliest times at which one might expect to find positive results, for the main object of my experiments was the study of the later pulmonary lesions, and animals dying during the first few weeks have usually been discarded. Glandular lesions, however, are well developed in 94 days in the first animal of Series 3, and in Series 4 recognisable reactions are present after 72 days. It would seem therefore that three months is ample time in which to determine by this test whether a dust is active or inert.

When questions of considerable medico-legal importance are concerned, pathological evidence should be as conclusive as possible, and it may be argued that nothing short of the demonstration of its capacity to produce absolutely typical pulmonary lesions is sufficient to incriminate a dust. But this is a counsel of perfection, and it seems highly probable that a correct opinion as to the nature of a dust can be reached by a combination of indirect observations of which the one here described is by no means the least important.

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FAILURES OF GASTRIC SURGERY*

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IN their decision to devote an evening to the discussion of therapeutic failures, the officers of the society are to be congratulated. I would even express a wish that this discussion may be regarded as a forerunner of others and that it may become customary to review at one session annually the limitations of our powers as healers in other branches of medicine or surgery. We know only too well that, as individuals, we commonly learn more from our disappointments than from our successes. By a pooling of unsuccessful experience we have surely a better prospect of discovering the causes of error and of improving standards of practice than by keeping it to ourselves.

Although some methods become established and perfected more rapidly than others it is clear that all true advances in therapeutics must pass through an experimental phase, in the course of which indications are sifted and technicalities developed. During this phase results are found to vary considerably in relationship with individual judgment and ability.

*Address delivered in opening a discussion at the Medical Society of London on April 23rd.

Gastric surgery is no exception. It has evolved swiftly in the last quarter of a century, but the results have had to be waited for; immediate benefits have often given place to later disappointment; and, with a very human impatience for achievement, technique has often been cultivated more studiously than judgment. Of this there is now a wide appreciation. Our self-criticism, however, should take the form not of condemnation but analysis, and if I may be permitted, in some degree, to direct the trend of this debate I would straightaway suggest that we do not allow our remarks to degenerate into a competitive advocacy of medical measures as opposed to surgical, or of one surgical method as opposed to another, but rather that we should seek to discover patiently and dispassionately the main causes of failure, the main consequences of failure, and the best means of promoting an increase in our tale of successes in the future. There has been, from time to time, a tendency for the surgeon to decry the physician and vice versa in respect of the treatment of peptic ulceration, both parties disregarding the obvious inclination of medical failures to drift to the surgeon and of surgical failures to drift to the physician, while each remained uncertain as to the proportion of successes obtained and the types of case most successfully handled by the other. This antagonistic habit of mind is surely unbecoming and unphilosophical. In a problem so difficult there should have been collaboration, not competition, all along the line.

In considering what contribution I might make as opener of this discussion I have encountered difficulties from the outset. Not least among these was the decision as to what constitutes a failure. Let me first endeavour to answer this question, for it is one in respect of which we must find common agreement. Having thus cleared the ground I propose to consider briefly: (1) the causes of failure, other than those connected with technique, which lies outside my province; (2) the types of failure, their symptomatology and treatment; and (3) the avoidance of failure in so far as this is connected with clinical judgment and selection of cases.

WHAT CONSTITUTES A FAILURE?

Perhaps I can best reply to this question by citing certain recognised eventualities.

(1) An anastomotic ulcer developing within a year or two of an operation for dyspepsia due to an active, non-obstructive duodenal ulcer is a failure in that a worse condition than that for which the operation was undertaken has ensued, and, frequently too, in that the operation was not an essential undertaking.

(2) An anastomotic ulcer developing after an operation for stenosis (unless technique be to blame) is in a sense less of a failure, for here there was no reasonable alternative to the treatment adopted.

(3) An anastomotic ulcer following eight or ten years after an operation for duodenal ulcer, with good health intervening, can hardly be recorded in the same category as the early recurrence and is almost as entitled to be called a success as a failure.

(4) A gastro-jejunostomy complicated by a mechanical difficulty, such as vicious cycle vomiting or a "dumping" stoma, but accomplishing healing of the ulcer, is only a partial failure, but also only a partial success.

(5) Death or recurrence following gastrectomy undertaken for a very large adherent ulcer of the lesser curvature, causing serious pain and proved to be beyond the hope of medical relief, is hardly, in my opinion, to be regarded as a failure. In such cases to do nothing is unthinkable, and yet the scales are heavily weighted against surgical success.

(6) Death or recurrence or a gastrectomy anæmia following gastrectomy undertaken for a small lesser curvature ulcer or an ulcer of medium size lacking an adequate medical treatment I should regard as consequences of a grave failure of judgment.

(7) A relieving gastro-jejunostomy for an obstructive pyloric carcinoma, which gives comfort for a period of months, does not cure but is certainly not a failure.

(8) A fatal gastrectomy for an extensive non-obstructive carcinoma of the stomach, in view of the inevitable issue if no operation is performed, is not to be regarded as a serious failure, but where general rather than local symptoms predominate I am persuaded that the decision to operate in such cases often represents a failure of judgment.

Briefly I would suggest that an operation which leaves the patient immediately no better or worse than before, or which results in death in conditions which might have been cured or considerably palliated by medical means, must be regarded as a failure. In the case of recurrent ulceration after operation the degree of success or failure is partly to be assessed by the duration of good health. In cases in which operation for an ulcer has resulted in the healing or eradication of the ulcer but also in digestive discomforts or ill-health of another kind—i.e., vicious cycle vomiting, intestinal dyspepsia, diarrhœa, gastrectomy anæmia—success is clearly only of a partial kind.

THE CAUSES OF FAILURE

These may, as has been indicated, be subdivided into those due to technical error or surgical inexperience, and those due to faulty selection or judgment. Others again, but probably a minority, are due to incidental misfortunes or lack of coöperation on the part of the patient.

Faulty judgment may be held to include decisions to operate in cases in which there is no sufficient justification for surgery at all, or in which medical treatment has been given no trial or an insufficient trial, or in which the patient's general state of health or the circumstances of his life at the time make surgery an unwise procedure. Inadequate attention to the anatomical, physiological, or psychological peculiarities of the individual, any or all of which may render a case unsuitable for surgery, also leads to errors in judgment. A decision to operate for an unsuitable symptom such as hæmorrhage or too soon after a hæmorrhage is another type of judicial error. It is in respect of assessments such as these that the surgeon, employing too narrow a pathology and too concentrated upon the local aspects of treatment, has sometimes shown himself defective.

TYPES OF FAILURE AND THEIR SYMPTOMATOLOGY

I am familiar with five complications of gastro-jejunostomy deserving the qualification of partial or grave failure. These are, in order of ascending gravity and frequency: (*a*) the dumping stoma,† (*b*) vicious cycle vomiting, (*c*) peri-anastomotic hæmorrhagic gastritis, (*d*) persistence of the original ulcer, and (*e*) anastomotic ulcer. Anastomotic ulcers may cause a painful and often intractable dyspepsia, or again be complicated by hæmorrhage, perforation, stenosis, and (the gravest complication of all) gastro-jejuno-colic fistula.

The two important complications of gastrectomy are recurrence of ulceration and gastrectomy anæmia, which may be either of the simple or pernicious type.

The symptoms of the "dumping stoma" are flatulent discomforts and distension around the navel and below the gastric area of reference following soon after a meal. In a small proportion of cases there is diarrhœa with passage of light-coloured stools in which undigested food-particles may be recognised. In such cases a short rest after meals in the recumbent

† This term is used to describe a condition in which food leaves the stomach precipitately through a too patent stoma, with rapid overloading of the small bowel.

posture should be enjoined and fluids taken apart from meals.

In vicious cycle vomiting there are recurring attacks of discomfort or pain with copious bilious vomiting. Such attacks may appear soon after the operation of gastro-jejunostomy and disappear later. In a small proportion of cases they persist and reoperation may become necessary. They are, I believe, a consequence of technical flaw.

Recurrent hæmorrhages after gastro-jejunostomy *without* pain or dyspepsia may be due to local ulceration or to a diffuse peri-anastomotic gastritis, a condition with which Dr. A. F. Hurst has familiarised me. Treatment should generally be medical, particular pains being taken by liberal administration of iron to combat anæmia at all times. Only in the graver cases and after a full trial of medical measures should a partial gastrectomy be considered.

In anastomotic ulceration the pain is commonly severe but very similar in type and time-relationships to the pain of the original ulcer. It is less responsive to medical treatment. The maximum tenderness is usually found one and a half inches above and to the left of the navel. Prolonged trials of medical treatment should be made before advocating further surgery, but they are much less frequently successful than in the case of a primary gastric or duodenal lesion.

In gastro-colic or gastro-jejuno-colic fistula there are added to the clinical syndrome of anastomotic ulcer diarrhœa (continuous or intermittent), eructations of colonic flatus, loss of weight and, in some cases, severe anæmia. The treatment must be surgical.

THE AVOIDANCE OF FAILURE

In so far as this depends upon other factors than technique I would urge first the importance of close attention to the age, physical and mental type, general fitness, family history, occupation, habits and economic status of the patient, and secondly, to the duration of the ulcer-history. Neither the very old nor the very young make such good subjects for gastric surgery as those in the middle period of life. In the case of young men in the twenties the ulcer is necessarily of more recent arrival, obstructive and other mechanical complications (such as anchorage of the ulcer-base) are more rare, and coöperation in the matter of post-operative caution is less easily ensured. In patients over 60 the operative risks are sufficiently greater to make the decision to perform either a short-circuit or a partial gastrectomy a more doubtful one.

A strong family history of duodenal ulcer emphasises the likelihood of constitutional predisposition, in the face of which the best surgery may fail. The lean, nervous, and anxious-minded patient—a fairly common type among the victims of duodenal ulcer—often suffers more in the post-operative phase and is more liable to retain dyspeptic discomforts. The rushed and restless business man, the doctor, and the man too much addicted to alcohol and tobacco are all, to my thinking, unfavourable types for gastro-jejunostomy, even though they may be difficult to keep well by medical means. For men of the working classes, whose cases would in better circumstances be considered more suitable for medical treatment, operations may sometimes have to be advised (even recognising the risks of failure) as they cannot afford long periods of rest or the dietaries which would be necessary as alternative treatment. Anæmia and oral sepsis or concurrent ill-health may raise the risks of surgery sufficiently to make palliative measures preferable.

The duration of ulcer symptoms is an important deciding factor. There are very few patients with histories of recurring ulcer dyspepsia of under five years, and lacking obstructive symptoms for whom I would willingly suggest an operation. Recent hæmorrhage and recurrent hæmorrhages I have come to regard as actual contra-indications to gastro-jejunostomy unless other arguments, such as mechanical complications or the large size of the ulcer weight the scales in its favour. In a Hunterian lecture in 1932[1] I referred to 12 cases of duodenal ulcer with hæmorrhage of which 9 were apparently subjected to gastro-jejunostomy on the strength of hæmorrhage. Of these 12 cases 8 bled again subsequently.

A rapid emptying time in duodenal ulcer as judged by radiology or the fractional test-meal and a high "up and down" peak of gastric acidity are to be used as arguments against a short-circuit. A slow emptying time and a steadily climbing curve of acidity are relatively favourable to a short-circuit.

Positive indications for surgery are perforation; pyloric or mid-gastric stenosis; a chronic posterior duodenal ulcer with the particular syndrome pointing to anchorage to or erosion of the pancreas; a chronic duodenal ulcer complicated by duodenal ileus; and chronic duodenal or gastric ulcers estimated to be of large size and long standing which have resisted prolonged and careful medical treatment. Even with attention to these precautions I have knowledge of three cases selected and referred by myself to surgeons of first-class experience in which secondary ulceration followed a short-circuit. Ulceration may also recur after gastrectomy and it will be some years before we can assess the final benefits of this increasingly frequent operation.

The final decision should never be based on any rule-of-thumb method, but must be made in each instance by a careful review of all the available evidence, both of a general and a local kind. So difficult may this decision be that it should commonly require the coöperation of physician and surgeon. In neurological and thoracic surgery such coöperation is generally regarded as sound and reasonable. Every operation should be followed by an adequate period of dietetic treatment and controlled by tests for occult blood in the stools. Interrupted courses of iron and a bi-weekly ration of liver or liver extract should be advised after gastrectomy.

CONCLUSION

In borrowing from my own fairly considerable experience of surgical failures, for I have mentioned no complication of gastric surgery which I have not personally seen, I may seem to exaggerate their frequency. This I have no wish to do. Actually for every ten cases of duodenal ulcer seen in private practice I see one case of anastomotic ulcer, but in all probability the frequency of this, the most important type of failure, taking all surgeons of all grades of experience, would still be less than 10 per cent.

We should not, however, be actuated in our caution solely by the numerical frequency of failures, but also by their gravity, and we must reluctantly confess that when gastric surgery fails to relieve it commonly leaves the patient in worse case than before. This cannot be said of medical treatment, however high we estimate its failures to be, excepting in so far as these failures may leave a liability to the graver accidents. It has been argued that surgery protects from dangerous complications such as perforation and hæmorrhage, but this needs qualification. I have referred elsewhere[1] to 23 cases of gastro-jejunostomy

[1] THE LANCET, 1932, i., 327.

in which there had been no bleeding prior to operation and in 10 of which bleeding occurred later, and to 7 cases of anastomotic ulcer with a history of previous duodenal perforation, in 3 of which perforation had occurred again.

The triumphs of surgery are more complete and lasting than those of medicine, but, by the very nature of the risks taken, the failures of surgery are also more complete and more lasting. Excepting therefore in urgent or obvious situations the responsibility of deciding upon operation must remain a serious one and should require every contribution we can muster from balanced experience and prognostic insight. Improving technique has greatly diminished the immediate mischances of gastric surgery. Improving clinical judgment and physiological studies should ultimately help to eliminate or greatly diminish those mischances which follow at a later date.

FAILURES OF GASTRIC SURGERY*

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THE days when a surgeon only required to know how to operate are long since past, and now one of his most important functions is to decide when to operate. Every operation that is unnecessarily performed is a surgical failure yet, in spite of the close coöperation between physician, laboratory worker, and surgeon, such failures are only too frequent. In gastric surgery they fall naturally into two groups.

Errors of diagnosis.—If an operation has been performed in the belief that a gastric or duodenal ulcer or a gastric carcinoma is present and the expected lesion is not found, surgery has failed at its very inception. The underlying condition is not improved and is often made worse. The patient has been subjected to a definite risk of life, to a period of some days of grave discomfort and pain, and to a further period of some weeks or more of limited activity. His life and work have been gravely disturbed and to a varying extent he may have been financially embarrassed. Yet there is no surgeon who can honestly state that he has been free from this fault. It is true that to-day we no longer hear the suggestion made that the symptoms are anomalous and it would be better to look inside and see what is wrong, and but rarely are we told that medicine has failed and that surgery had therefore better be tried. Very few surgeons will now consent to operate unless there is very strong evidence of the presence of an organic lesion which can only be cured by operative measures, but our knowledge is still so incomplete that errors in diagnosis are even now made and the abdomen unjustifiably opened.

The error most frequently occurs when the presence of carcinoma is suspected, and here perhaps the mistake is more pardonable, for the disease, if left too long—and often indeed, if left until the diagnosis is certain—becomes inoperable, so that operation upon suspicion alone is often justified. Moreover, the settlement of all doubt and the relief to the patient from his dread suspicion may do much to set him on the road to recovery. It is difficult to estimate with any accuracy what number of cases are so operated upon, for most surgeons, myself included, index their cases under proved lesions and do not keep any list of their suspected duodenal or gastric lesions, although they are often entered up on the individual notes.

I find, however, that in my statistics which were last analysed in August, 1933, I have operated upon 2172 proved gastric lesions and upon 171 cases which have been indexed as gastritis, or some other non-surgical gastric lesion. That is to say, in a series of 2343 operations there was a percentage of 7·2 errors of diagnosis (Table I.).

TABLE I.—*Errors of Diagnosis*

		Errors.	Per cent.
Total operations ..	2343	171	7·2

Operative Mortality

	Total.	Deaths.	Per cent.
P.G.E. for duodenal ulcer	703	14	2*
P.G.E. for all uncomplicated lesions ..	846	25	2·9
Wedge resection for lower curve ulcers..	272	12	4·4

* Includes series of 283 with no death.
P.G.E. = posterior gastro-enterostomy.

Although most of these were operated upon in the belief that carcinoma was present, yet the percentage is much too high.

Operations for medical lesions.—The second serious error is to perform an operation for a lesion which could be cured medically. In all patients the fear of operation is a very real one, and those of us who have been honoured by having many doctors among our patients will realise that this is not limited to the ignorant. The figures of such cases are, however, not assessable, for they are very largely a matter of personal opinion. Many physicians believe that they are much higher than do the surgeons, and probably Dr. A. F. Hurst, for instance, would place them a good deal higher than I should; but the two branches are to-day approaching agreement on this point, and it is now generally accepted that all early ulcers should be treated medically, that all chronic ulcers if uncomplicated should be given a trial of medical treatment before surgical intervention is sought, that the more unsuitable the patient for operation the longer the trial, and that as a general rule the shorter the history of gastric symptoms the greater the probability of carcinoma, and therefore the sooner should surgical intervention be undertaken.

Because of our wider knowledge of the after-results and the closer coöperation in the work of the physician and surgeon, we much less frequently see to-day operations performed for visceroptosis, for chronic colitis, and other lesions which can be more readily relieved by medical measures. In the same way gross errors of diagnosis and treatment, such as the performance of gastro-enterostomy for tabes dorsalis, chronic uræmia, and the vomiting of pregnancy very rarely occur.

OPERATIVE MORTALITY

Even to-day there is no operation which is free from risk and in every case this risk must be balanced against the danger of the lesion. Such a balance can only be arrived at after wide experience and a full knowledge of the patient's general health. The teaching that a given lesion must be treated by a certain operation is useful for the undergraduate but is futile in practice. The risk will depend upon the age of the patient, the presence of local or general complications, and the experience of the surgeon. If the first two are advanced and the third is retarded the risk of operation may easily exceed that of the lesion, and therefore either no operation should be performed or

* Contribution to a discussion at the Medical Society of London on April 23rd.

some palliative measure should be executed. This variation in the patient's risk is well exemplified by the curious experience of many surgeons that their mortality-rate rises with their experience. The explanation lies in the fact that an increasing proportion of patients who are aged, who are excessively fat, or who have some other counter indication to operation are sent to them for treatment. In spite of this the basis of analysis must be a knowledge of the mortality in different series operated upon by the individual surgeon. The larger the series the more accurate the figures, for both good and bad risks are more likely to be included. An enormous number of such figures have been published. Surgeons especially skilled in this branch of work have reported remarkably low mortality-rates, whereas the opponents of operation have collected statistics of operations performed, perhaps by many surgeons, which show a much higher mortality. With a discussion of the value of these figures I do not propose to weary you, for this has been done on frequent previous occasions. I shall simply mention a few figures obtained from the study of my own statistics which were analysed up to August, 1933. These figures, as already mentioned, comprise a total of 2172 gastric operations.

The operation which is most frequently criticised to-day is that of gastro-enterostomy, for many claim that it is associated with a relatively high mortality and is followed by a grave risk of after complications. It will be seen, however, from my figures (Table I.) that in 703 cases of duodenal ulcer the mortality was only 2 per cent. and these cases included a consecutive series of 283 operations without a death. Even when performed for lesions other than duodenal ulcer its mortality only rises to 2·9 per cent., so that the dangers of operation are not excessive and in my experience do not in any way equal those of hæmorrhage and perforation in patients who have had no operation. Ulcers of the lesser curve of the stomach carry with them a rather higher operative mortality, as is well recognised, and in 272 of these patients treated by wedge resection and gastro-enterostomy, which to my mind is the operation of choice, there were 12 deaths, a mortality of 4·4 per cent.

It must always be remembered, however, that these figures, although relatively low, must in a sense be regarded as an added risk to the disease. It is but little consolation to a patient's relatives to know that a serious risk which might eventuate in two or three years' time has been completely removed if the patient dies shortly after operation.

OPERATIVE RESULTS

Before discussing the individual causes of post-operative failure it is necessary to know the percentage of cures. This can only be estimated by investigating a considerable number of cases. As with the operative mortality, diversity of opinion has led to much criticism of published statistics. I will therefore make no attempt to discuss the published results, but will only show you some of my own figures and will lay stress upon the fact that a patient who is described as a cure is one who can eat anything and can continue his daily work. Many of the patients who attend my follow-up department are dock labourers and stevedores, who have for their mid-day meal meat and bread with perhaps an onion and a piece of cheese, and if unable to partake of this diet cannot continue their work. They have no opportunity of living upon the diet which is so often insisted upon for those who have obtained a medical cure. In determining whether the patient has reached this standard it is, of course, essential that his progress has been watched for a considerable time, and for this reason the preparation of statistics of after progress is always a laborious work. I shall give you the figures I published for the collective investigation of the British Medical Association, for this series of cases was watched for a minimum period of five years, the longest period being nine years. Of 172 duodenal and pyloric ulcers treated by gastro-enterostomy, 84·9 per cent. of all cases, or 88·8 per cent. of those followed, were cured. In 67 cases of ulcer of the lesser curve treated by a wedge resection, the figures were somewhat higher, being 88 and 92·18 respectively. The partial gastrectomies were associated with a higher mortality, so that the figures were 70·2 and 74·2 respectively (Table II.).

TABLE II.—*Five-year Cures after Operation*

	Total.	Per cent. of all cases.	Per cent. of followed cases.
P.G.E. for pyloric and duodenal ..	172	.... 84·9	.... 88·4
Wedge resection for lower curve ulcers	67	 88	.... 92·1
Partial gastrectomy	37	.... 70·2	.... 74·2

P.G.E. = posterior gastro-enterostomy.

It has been necessary to lay some stress upon the successes before considering the failures, for there are very definite and well-recognised failures which occur in the hands of every surgeon and which at present it is difficult to prevent. To-day great stress is being laid upon them and there is a danger of their frequency and importance being exaggerated and the real use of these valuable operations being overlooked. Therefore in any discussion such as this, which is mainly limited to a consideration of the failures, it is well to keep constantly in mind that they form but a small proportion of the total.

Probably every surgeon has from time to time met with the rare examples of failure due directly to errors of technique or to rare accidents. The former, among which may be mentioned such gross errors as uniting the stomach to the lower ileum or even to the transverse or pelvic colon, making an opening which is much too small, allowing the afferent loop to become constricted by the mesocolon, placing the anastomosis on the wrong side of an hour-glass constriction or uniting the posterior wall to the anterior, are with increasing knowledge becoming extremely rare. They are failures not of gastric surgery, but of grossly incompetent gastric surgery. Post-operative hæmorrhage is also probably due to errors of technique which, however, are less evident and thus less easy to avoid. Among the rare accidents may be mentioned herniæ through the opening of the mesocolon or behind the afferent loop and retrograde intussusception through the gastro-enterostomy opening. The former may be prevented by careful technique, but the latter, although very rare, seems to occur even when the operation has been most carefully performed.

Considerable discredit is falling to-day upon gastric operations owing to certain complications and failures which have been much discussed. These are four in number, and it is to them that our attention must be mainly directed. They are: (1) gastro-jejunal ulcer, (2) recurring ulcer, (3) subsequent development of carcinoma, and (4) post-operative anæmia.

GASTRO-JEJUNAL ULCER

The frequency of this serious and dangerous complication has been much discussed. Many physicians seeing chiefly the failures after gastro-enterostomy believe that it is a common event. Hurst states that

it is a frequent and dangerous sequel to gastro-enterostomy after duodenal ulcer, and that the number of marginal ulcers slowly and steadily increases the longer the cases of gastro-enterostomy are watched. He quotes the remarkable series published by Lewisohn in 1925 of 68 cases of gastro-enterostomy, 34 per cent. of whom later developed this complication. Similar though not quite such extreme views are held by many surgeons, especially those on the Continent, and for this reason they have given up gastro-enterostomy in favour of partial gastrectomy. On the other hand, surgeons who have carefully watched their cases have shown that the incidence is somewhere in the neighbourhood of 3 per cent. It is manifestly impossible here to enter fully into these much-discussed figures. This I have done in a communication, an abstract of which I am giving at the meeting of the Association of Surgeons and which I hope will later be published in full. I have for this purpose analysed my cases up to August, 1933, and have arrived at certain very definite conclusions which may be summarised as follows and which are based upon the figures shown in Table III.

TABLE III

Total cases 2172.
Marginal ulcers (with local resection) 18. Recurrences 6.

		Gastro-jejunal ulcers and per cent.
Total cases	2154	31* (1·4)
G.E. and gastrectomy	1859	31 (1·6)
Posterior G.E.	1313	29 (2·2)
Gastrectomy	469	2 (0·43)
Duodenal ulcer	893	29 (3·24)
Duodenal ulcer watched 10 years	457	18 (3·9)
Gastric ulcer	683	1 (0·14)
Carcinoma	221	0 (0)

* One recurrent.
G.E. = gastro-enterostomy.

1. Gastro-jejunal ulceration is only common after gastro-enterostomy for duodenal ulcer.
2. It occurs after 3–4 per cent. of all such operations.
3. It is much more common in males.
4. It is directly due to hyperacidity.
5. The hyperacidity is congenital and possibly a familial fault.

The mortality of gastro-enterostomy should not exceed a maximum of 2 per cent., whereas after partial gastrectomy it is very seldom less than 6 per cent. Thus the mortality of the latter operation is greater than that of gastro-enterostomy together with the incidence of marginal ulceration, and it is not justifiable to replace gastro-enterostomy by partial gastrectomy, which should be used only for the few cases which have developed a marginal ulcer.

The greater frequency in males has long been recognised. In the 30 cases following my own operation of gastro-enterostomy there was only one female. In 49 further cases in my series where the gastro-enterostomy was performed elsewhere there were 6 examples. The reason why these ulcers are almost entirely limited to males in whom a gastro-enterostomy has been performed for a duodenal ulcer has now been proved to be due to the fact that in such patients there is a much higher acidity. At one time it was thought that errors of technique such as the use of a button, of unabsorbable sutures, or of clamps was the exciting cause. Such may increase the incidence, but they are only a contributory factor. If there is a high acidity the ulcer may develop in the absence of such factors. Although not entirely absent after partial gastrectomy, they are less frequent as this operation brings about a greater reduction of acid. The careful experimental and clinical work which has proved that a high acidity is the cause is too long to discuss here, but on the clinical side we owe most to the work and writings of Hurst. My own figures, as shown in Table IV., entirely support

TABLE IV.—*Average Test-meals*

		Cases.	Average free HCl.	Average total acid.
Lesser curve	Females	57	0·108	51
	Males	135	0·123	61
Duodenal	Females	44	0·136	57·6
	Males	213	0·165	63·5
Duodenal, later gastro-jejunal		13	0·19	71

this view. Hurst also shows that not only is hyperacidity a congenital fault, but there is often a family history not only of duodenal ulcer but of gastro-jejunal ulcer following gastro-enterostomy. It would appear that this extreme degree of the hyperæsthenic gastric diathesis is present as a congenital fault in some 3–4 per cent. of all cases of duodenal ulcer.

Because of this underlying fault any form of local operation or any method of undoing the gastro-enterostomy is useless in the treatment of these ulcers. The only operation that holds out any hope of success is a partial gastrectomy, sufficiently extensive to reduce the acidity. It is a serious and irksome operation and associated with a high mortality, but in dangerously ill patients a temporary palliative operation may be performed and the gastrectomy carried out later when the patient's condition has improved. By a careful selection of such cases and experience in the operative technique the mortality can be greatly reduced. In my last series of 20 cases there was only one death.

RECURRENT ULCERATION

At one time there was much discussion as to the value of gastro-enterostomy in the treatment of ulcers of the body of the stomach, but it is now generally agreed that this method is not sufficient. It is true that some very large ulcers found in patients who are dangerously ill from hæmorrhage, or vomiting, or continued pain, are entirely cured by a gastro-enterostomy which was performed as a palliative measure, but a considerable number, especially of the penetrating ulcers, still persist. In my own series there were 117 cases of lesser curve ulcer treated by gastro-enterostomy alone, and in five of these the ulcer persisted (Table V.). Of greater interest are the

TABLE V

	Total.	Recurrent ulcers.	Carcinoma.	Severe anæmia.
G.E. for duodenal ulcers	865	4	6	0
G.E. for gastric ulcers	117	5	1	0
G.E. and resection for gastric ulcers	325	6	5	1
Partial gastrectomy	469	0	0	5
Suture for perforation	—	32	—	—

G.E. = gastro-enterostomy.

cases where new ulcers arise after a gastro-enterostomy. I have for long upheld the view that duodenal ulcers do not persist or recur after a properly performed gastro-enterostomy. I have never yet met with such a case where the stoma was functioning and was accurately placed. I believe that most of the cases described as such recurrences are really gastro-jejunal ulcers. The cases to which I refer now are those in which the ulcer develops on the lesser curve after the performance of a gastro-enterostomy for duodenal ulcer. Such cases are rare (Table V.), there being only 4 in a total of 865

gastro-enterostomies for duodenal ulcer, but the mere fact that they can arise is the strongest argument against the routine use of gastro-enterostomy alone for lesser curve ulcers.

Another interesting group of cases is that in which an ulcer persists after simple suture for a perforation. I have long maintained that the majority of perforations occur with chronic ulcers, for in nearly all my cases a prolonged history had been obtained, and of a series of 42 perforations examined post mortem 41 were definitely chronic ulcers and one was doubtful. Nevertheless many surgeons claim that most of the perforations occur with acute ulcers and that a simple suture is alone necessary to bring about a cure. As with so many other points in gastric surgery this matter has given rise to much discussion, but that many ulcers do persist in spite of simple suture is beyond all question. In my own series there have been 32 cases where a simple suture was performed elsewhere, but persistence of the symptoms necessitated further operation. I have no means of determining the percentage of such persistence, for I do not practise suture alone as a routine method. Many similar cases have, however, been reported by other surgeons. Although my experience therefore favours the view that most of these ulcers are chronic, it must not be thought that I would advocate the routine performance of gastro-enterostomy on all occasions in cases of perforation. If the patient's condition is sufficiently good I should undoubtedly carry it out at that time, but if he is gravely ill and there has been flooding of the peritoneal cavity, a simple suture alone should be performed: but the important point is that under such conditions the patient should never be told that he is cured, but should be carefully watched and a further operation advocated if the ulcer persist. In nearly all such cases that I have seen where this course has been followed a later operation has been required.

SUBSEQUENT ONSET OF CARCINOMA

The relationship of carcinoma to chronic gastric ulcer has always been a vexed question. Its onset has not only been reported after gastric operations other than partial gastrectomy but the frequency of this complication has been regarded as another reason for the substitution of gastro-enterostomy or local excision by a partial gastrectomy. Paterson [1] discussed this question in 1926 and stated that in 493 of his cases 2·5 per cent. were said to have died subsequently of carcinoma. He found, however, that many of these cases were doubtful, and that he was only able to find one case in which the carcinoma was undoubtedly gastric, and in that case it had not occurred at the site of the ulcer.

In my own series there were 1307 cases treated by gastro-enterostomy with or without resection of the ulcer, and in this series there were 12 cases (0·91 per cent.) which subsequently developed carcinoma. These, however, fall into three distinct groups. There were, firstly, those in which a gastro-enterostomy was performed for an ulcer so large and so adherent that a partial gastrectomy was considered unwise, and in which, although at the time of the operation the lesion was considered to be benign, yet the evidence of carcinoma developed so shortly afterwards that there could be no doubt that the ulcer was carcinomatous at the time of the operation. In such cases the lesion was manifestly inoperable, and even if a partial gastrectomy had been performed recurrence would certainly have followed. These cases are, therefore, no indication for the replacement of gastro-enterostomy by a partial gastrectomy.

In the second group a gastro-enterostomy is performed for an ulcer in the duodenal or pyloric region, which ulcer is apparently healed, and after a period of varying time a carcinoma develops in some part of the stomach remote from the primary lesion. Such a carcinoma is no more prone to occur in these cases than in normal persons, in fact, it is probably less so, for these patients have a hyperchlorhydria, while carcinoma, as the work of Hurst tends to show, is more prone to occur in those who have hypochlorhydria. Hence to suggest that a case of duodenal ulcer should have a partial gastrectomy performed in order to prevent the later onset of carcinoma, is even less sensible than to suggest that all normal persons should have such an operation lest at a later date they develop carcinoma, or that all young women should have a hysterectomy lest they develop carcinoma of the cervix. In my own series there were 3 such cases, the carcinoma occurring 3, 15, and 17 years respectively after the gastro-enterostomy (Table VI.). The remaining group comprises those

TABLE VI

Total cases	1307
Total carcinoma	12 (0·91 %)
Present at first operation	4
Remote from site of ulcer	3
Occurring at site of ulcer	5 (0·37 %)

cases in which the carcinoma occurs in the same area of the stomach in which the ulcer was situated, and although it may arise many years afterwards, it is fair to assume that it originated in the scar of the old ulcer. The carcinoma may be situated either within the pyloric region or on the lesser curve and sufficient time has elapsed to make it certain that it was not present at the time of the first operation, and thus its onset would have been prevented if a partial gastrectomy had been performed. In my own series there were five cases which were placed in this group, and although in three of them a second operation was not performed, either the site of the tumour as found on clinical examination or the X ray appearances suggested that the scar of the old ulcer was involved in the carcinoma. But even if they all belong to this group there were only five cases in a series of 1307 gastro-enterostomies, that is a percentage of 0·37, so that the risk of this complication cannot be considered as great. These five cases occurred 4, 4, 5, 6, and 6 years respectively after the first operation. It will be noticed (Table V.) that there were no cases of carcinoma following a partial gastrectomy.

POST-OPERATIVE ANÆMIA

Of late years much has been added to our knowledge of anæmia, and it is now realised that Addisonian or pernicious anæmia is due to the absence of a substance formed by the action of a constituent of the gastric juice upon the protein of beef muscle. It would therefore be expected that this form of anæmia would occur after complete gastrectomy and, in fact, Moynihan pointed out as far back as 1911 that this complication did occur. It has since been realised that it may also be found after a partial gastrectomy and even after a gastro-enterostomy, although the explanation of this occurrence is not so simple. Many cases of anæmia following gastric operations are found, however, not to be of the macrocytic or pernicious type, but to be simple or microcytic and due to the absence of available iron. The frequency of these two types has been much disputed. Rowlands and Simpson [2] collected 15 cases of the Addisonian type from the literature and added

2 more of their own. Of the 17, 5 occurred after total gastrectomy, 8 after partial gastrectomy, and 4 after gastro-enterostomy. Gordon-Taylor [3] found 8 cases of mild anæmia and 15 of severe after 52 partial gastrectomies, but these did not resemble the Addisonian type. Morley [4] also found that 12 out of 21 Polya operations developed anæmia, but none occurred after the Schoemaker operation. Vaughan [5] collected 122 cases of anæmia, which had been fully investigated, following gastric operations, but achlorhydria was not present in all of them. Hurst [6] collected five cases of undoubted macrocytic anæmia, but states that although this variety is rare the simple microcytic anæmia is quite common. There is no doubt that mild forms of anæmia are not uncommon after a partial gastrectomy, but the frequency of the more severe types is uncertain. It is possible now that this more extensive operation is being so widely performed, especially on the Continent, as a routine operation for all gastric lesions that a large number of severe anæmias will soon have to be treated. It has also been very noticeable in my follow-up department that when a partial gastrectomy has been performed for a lesion which was associated with severe hæmorrhage previous to the operation that the anæmia may take a very long time to improve, but the majority respond in time to large doses of iron. In my own experience the condition is very rare after gastro-enterostomy (Table V.), there being no example after 982 operations. There was one case following 325 local resections and five cases in a group of 469 partial gastrectomies. These cases were all of the microcytic type.

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Clinical and Laboratory Notes

THE TREATMENT OF SCHISTOSOMIASIS WITH ACRIFLAVINE

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THE possible utility of acriflavine in the treatment of schistosomiasis, suggested itself to me during some in-vitro experiments, in which it was found that this drug was rapidly lethal to the bilharzial cercaria in high dilutions in the presence of human blood-serum. The value of acriflavine in general medicine and surgery is so well known that it need not be touched on here. The fact that it is readily absorbed when taken by the mouth would make it a valuable weapon against schistosomiasis were its specific properties proved.

The cases treated in this series were all of a type of schistosomiasis found in the Stanleyville district of the Belgian Congo, where intestinal bilharziasis is caused by a parasite of the *hæmatobium-bovis* group whose peculiarities are now being studied. The series comprises 52 cases; of these 30 were under twelve years of age and the remainder ranged up to forty. The sexes were about equally represented. The first two patients treated received intravenous injections of acriflavine, but in all subsequent cases the oral route was used exclusively. The course consisted of five doses given on consecutive days, and the drug was given in a 2 per cent. aqueous solution, on an empty stomach, at least an hour before the next meal. In cases where dysentery was absent it was found that a daily purge made the treatment more efficacious. The dosage was regulated to age and weight according to the following scale:—

Children weighing 20 kg. or less were given a total dose equivalent to 0·02 g. per kg.

Children weighing 30 kg. were given a total dose equivalent to 0·015 g. per kg.

Adults weighing 60 kg. or more received a total dose equivalent to 0·01 g. per kg., with a maximum dose of 0·7 g.

Of the 52 cases in the series, 13 continued to show ova in the fæces unchanged. Of these 11 were small children who had received a total dose equivalent to less than 0·012 g. per kg. of body-weight. The remaining 39 cases became symptom-free in less than three days, and ceased to show any but degenerate eggs in the stools within the week. The first two cases treated were under observation for two months without the recurrence of symptoms or the reappearance of schistosome ova in the fæces. No toxic manifestations were observed in any of the patients treated, nor have any unpleasant sequelæ been encountered.

The results recorded in this preliminary note seem sufficiently good to justify acriflavine being given a more extensive trial in the treatment of the three types of human schistosomiasis.

VULVOVAGINITIS IN CHILDREN

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CHRONIC vulvovaginal discharge is not uncommon in young girls under the age of 14, and may lead to much discomfort, mental and physical, to the child and the mother. Often, but not always, a swab shows the primary infecting organism. In some cases the discharge appears to be simply one of other chronic catarrhal states of the mucous membranes in a debilitated child and might be put in the same category as chronic catarrh of the nasopharyngeal mucous membrane or the respiratory or gastro-intestinal tracts. The nature of the infection is therefore not always clear, and a swab may simply show a mixed infection.

Again, infection with the most intractable and pathogenic organism of all, the gonococcus, is not always easily demonstrated because the swab in chronic cases may show many pus cells but no clear evidence of the organisms. The gonococcus offers a prolonged resistance to treatment and the diseases it produces may be devastating in their effects. Consequently it is much the most to be feared. The *Bacillus coli* is frequently found in the swabs but is not necessarily causative.

The bacteriological results, however, are not the only important criteria for treatment. The volume of the discharge, its persistence, and the mental and physical state of the patient are enough to determine the need for treatment. Ordinary methods such as swabbing, gentle irrigation with antiseptics, and even searching douching with ballooning of the vagina are not always effective.

G. C. Schauffler[1] describes a new method of treatment with a 1 per cent. silver nitrate ointment made up with anhydrous wool fat. Small metal tubes (collapsible) are filled with the ointment and a piece of rubber tubing is attached to the nozzle of the tube. This rubber tubing nozzle is inserted into the hymenal opening of the vagina and the ointment is injected by pressure on the metal tube from the bottom. The injection is painless and none of the cases treated at hospital have complained of any after-effects or local irritation. The results are very encouraging, as will be seen from the following records:—

CASE 1, aged 6½, had had vaginal discharge for ten months, being treated for general debility. A vaginal swab was negative for pus, albumin, and gonococcus. From July 4th–22nd, 1932, 1 per cent. silver nitrate ointment was injected into the vagina daily for the first week, then every second day for a week, and twice during the third week. The vaginal discharge had decreased considerably after two treatments and had disappeared by the end of the first week. There has been no return of the condition. Swab was negative on May 24th, 1933. There was a recurrence in August, 1933. Six daily treatments and three treatments on alternate days were given, and there was no recurrence up to November, 1933.

CASE 2.—A child, aged 12 years 9 months, had had for several months a vaginal discharge associated with vague abdominal pains. A vaginal swab showed pus and coliform bacilli. She was given a similar course of injections to that of Case 1. The discharge had disappeared by the end of the second week. There was slight return of the discharge three months after the treatment but the condition cleared up without any further injections. Another slight recurrence appeared in March, 1933. A swab was negative for pus, albumin, and gonococcus in May, 1933. Up to November, 1933, there had been no return of symptoms.

Nine cases have been treated. Many of them have now been under observation for months since the course was given and most of them have shown no recurrence.

The swab examinations were made by Dr. Annie Somerford and the treatments carried out by Dr. Jenny Craig, to whom I am indebted for her interest and her careful notes on the cases.

[1] Schauffler, G. C.: Amer. Jour. Dis. Child., 1932, xliii., 350.

CONGENITAL PYLORIC STENOSIS IN FIRST COUSINS

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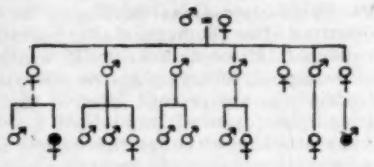
CONGENITAL pyloric stenosis has been recorded several times in more than one member of the same sibship and once in a mother and child. W. P. Sheldon and I have also reported a pair of uniovular twins, both of whom had this defect of development. There can be little doubt that the condition has a genetic basis, though the way in which it is inherited is still uncertain, and an environmental factor may be necessary for its production in addition to the genetic one. In the course of the last two years I have come across two instances of its occurrence in first cousins, and the diagnosis was verified in all four babies when a Rammstedt's operation was performed.

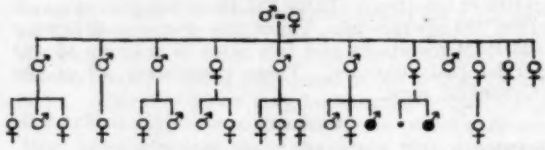
Pedigree 1.—The boy, a first child, was seen at the Hospital for Sick Children, Great Ormond-street, on Sept. 3rd, 1931, and was operated on successfully soon afterwards. His first cousin, a girl, had been operated on previously for the same condition at St. Mary's Hospital, Plaistow, and she also recovered. The mothers of the two babies were sisters; four of their brothers were married and had normal children, and one sister was married, but childless. There was no consanguinity of parents in either case and no previous history of the defect having occurred before in the family was obtained.

Pedigree 1



Pedigree 2.—The boy was seen at the Hospital for Sick Children on March 9th, 1933, at the age of 7 weeks. He was operated on and made a good recovery. He is a third child with an elder brother aged 7 years and a sister aged 5. His first cousin, aged 15 months, is an only child, but his mother had a miscarriage early in her first pregnancy. He was operated on at the Royal Free Hospital in January, 1932, and the surgical registrar kindly informed me the existence of pyloric stenosis was confirmed at the operation, from which he made a perfect recovery. The parents of these first cousins were brother and sister, and there were four other brothers and two sisters, all of whose children were normal, and one brother and two sisters unmarried. There was no consanguinity of parents and no history of any other cases of pyloric stenosis in the family.

Pedigree 2



None of the parents of these four babies suffers from dyspepsia, nor are they aware that they had vomiting or other digestive disturbance in babyhood.

It is probable that the occurrence of the condition in collaterals is fairly common and a history of it might be obtained more often, if a careful inquiry was made in every case. I think the publication of these two fully authenticated pedigrees is of value, because it provides further evidence that congenital pyloric stenosis is an inherited defect.

DONATIONS AND BEQUESTS.—The late Miss Elizabeth Lindsay, of Dundee, whose personal estate is valued at over £17,000, among other bequests left, on the expiration of the life rent of her brother and sister, £1050 to Dundee Royal Infirmary for the endowment of a bed in memory of her father, and £100 to the Royal Victoria Hospital, Dundee. The residue of the property is to be divided equally between Dundee Royal Infirmary, for the children's ward; the Sick Children's Hospital, Glasgow; the Sick Children's Hospital, Edinburgh; the Mukden Medical Hospital, and three other institutions.—By will the late Mrs. Amelia Ann Gardiner, of Harrogate, left £500 to the Yorkshire Home for Chronic and Incurable Diseases; £500 to the Harrogate Infirmary; and £500 to the Cancer Hospital, among other bequests. A share of the residue of the property will also go to the National Institution for the Blind, the Yorkshire Home for Chronic and Incurable Diseases, and the Harrogate Infirmary.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF OBSTETRICS

AT a meeting of this section on April 20th, with Prof. W. BLAIR BELL, the president, in the chair, a paper was read by Dr. MAX CHEVAL, of Brussels, on

Ovarian and Uterine Grafts

Dr. Cheval said that he proposed to consider only ovarian autografts—i.e., cases in which portions of ovary were removed from the patient and grafted into her. In most of the diseased ovaries removed, sufficient healthy fragments could be found to be worth transplanting; these portions preserved the ovarian function for a period which Dr. Cheval had not yet been able to determine. The ovarian autograft should be used, he said, in almost all double oöphorectomies. It was particularly important to graft fragments of the superficial part of the ovary, and to avoid handling the parts in such a way as to destroy the germinal epithelium and the subjacent layer of primordial follicles. Intramuscular grafts, and even subcutaneous ovarian grafts, were successful in all cases operated upon aseptically. If the grafts were composed of sufficiently healthy tissues, the ovarian hormone proportion in the organism was maintained at a normal level. The uterine graft was very easily effected in subcutaneous cellular tissue. At first, experimentally, there was found to be an intense reabsorption of uterine products, and that was explained by the luteal change of the ovaries. At a later stage the small endometrioma adapted itself to its new position and, more than a year afterwards, displayed undoubted signs of vitality. Grafts of ovaries in hysterectomised bitches exhibited phenomena of follicular atresia, sometimes cystic. After six months fewer follicles remained, but some were clearly about to mature. Ovarian grafts performed in conjunction with uterine grafts showed a much less degree of atresia. After six months both kinds of grafts showed plain signs of activity. In hysterectomised women under 40 uterine grafting should be performed whenever possible in order to maintain stronger vitality in the ovarian grafts. Between the ages of 40 and 50 ovarian grafting alone should be performed, while after 50 grafts were useless.

The experiments which Dr. Cheval described were of three kinds: (1) uterus left in situ and intramuscular ovarian grafts made; (2) ovarian autografts after bilateral ovariectomy and total hysterectomy; (3) uterine and ovarian autografts after bilateral ovariectomy and total hysterectomy. When ovaries were grafted into muscle or into cellular tissue only the superficial part of the ovary took root, and not until three or four months after grafting did the primordial follicles commence to show activity. No attempt should be made to assess results until that period had elapsed. Dr. Cheval showed a large series of colour slides of the grafts of the three kinds at various stages. When a piece of uterus was planted under the skin the uterine glands showed a strong reaction; they secreted a great deal of mucus, dilated, and often became cystic. One of the cases described in detail was as follows. On Dec. 3rd, 1932, a hysterectomy for uterine fibromatosis had to be performed on a woman aged 26¼. An ovarian graft was implanted into the rectus abdominis, in accordance with the Blair Bell technique, and a fragment of the uterus was grafted into the subcutaneous cellular tissue. When seen in February last, the patient complained of pains felt in the region of the uterine graft, at more or less regular intervals, the pains being accompanied by a livid coloration in the region of the operation wound. The graft, which had been implanted very superficially, could be easily felt as a small cylinder, 4 cm. long and 1 cm. in diameter. It was very probable, he thought, that the slight pains noted by the patient occurred at the time of the menstrual period; this was confirmed by the slight subcutaneous ecchymosis. The woman now had no menopausal disturbance, and the grafts were functioning 14 months after the operation. In a large series of cases, when ovarian grafting was done and the uterus was left in position, menstruation was re-established in over 80 per cent. of the grafted cases. Dr. Cheval was convinced that the vitality of autogenous grafts of the ovary was enhanced by the hormones produced by the uterine mucosa.

DISCUSSION

Dr. HERBERT SPENCER said that it had been his custom to leave an ovary or part of an ovary behind whenever possible when performing hysterectomy; in his experience most of those patients remained in perfect health. Out of 325 cases of total hysterectomy for myoma, he had had three in which malignant disease supervened in the part of ovary left behind, in one of the cases a sarcoma, after many years. If ovarian grafts became the vogue he feared there would be a proportion of late malignant sequelæ. With a uterine graft he thought it would be difficult to attain the degree of sterility which followed ovarian grafting. Infection was another factor which must be guarded against in grafting. He hoped that the researches being conducted into the constitution of the hormones would ultimately result in extracts potent when taken by the mouth or in the form of suppositories.

Mr. A. S. PARKES, Sc.D., said that Dr. Cheval had not only recalled the practicability of making grafts of the ovary, but had produced evidence that the presence of uterine tissue could have a material effect on the health of such ovarian grafts. As a result of animal experiments, such as those by Dr. Cheval, much was now known concerning the behaviour of isolated pieces of ovarian tissue, and though the human subject would not necessarily react in the same manner; the experiments showed anyhow what might be attempted. The presence of ovarian tissue was essential for the maintenance of the uterus, and this correlation was substantiated by the experiments. In only one case had removal of the uterus been found to have a definite effect on the ovarian cycle. Loeb found that the life of the corpus luteum after hysterectomy was prolonged to three times its normal length in the guinea-pig, but this had not been confirmed in regard to other animals. The speaker suggested that the recently discovered stimulating action of the anterior lobe of the pituitary body might be used in maintaining the health of the ovarian graft. The possibility of using an ovarian graft to alleviate menopausal symptoms, natural or artificial, was closely bound up with the problem of the cause of the menopause. The ovarian cycle was regulated from the anterior pituitary body. At the menopause did the ovary gradually cease to function because the required stimulus from the anterior pituitary body had ceased to become available, or did the ovary so change that it could not further respond to stimulus from the anterior lobe? If an ovary was removed from an immature animal and grafted into an ovari-

ectomised animal of adult age, that immature grafted ovary would undergo development and become mature long before it would have done so in the environment of the immature animal. And if an ovary was taken from an adult animal and grafted into an immature animal, this grafted ovary regressed, and did not show further development until the host became adult. The rapid maturation of the ovary grafted into the adult animal was caused by the immediately available anterior lobe hormone. Clearly there was a very delicate mechanism of control, but it was certain that the stimulating action could be used for increasing the activity and maintaining the health of ovarian grafts. In operations near the menopause great benefit would probably result from the administration of anterior lobe of pituitary extract at the time of the operation.

Dame LOUISE MCILROY had done some grafting experiments years ago on rabbits, and later on monkeys; she now felt, however, that there was no place for autografting, though there was a place for grafting the ovary of another person. If even a fragment of ovarian tissue remained it was infinitely better to leave it in its normal position than to remove and graft it. She had had no experience of grafts of the uterus.

The PRESIDENT said that he had himself carried out ovarian grafting 218 times since 1912, but the operation had been sadly neglected by British gynæcologists. He had always maintained the importance of preserving the natural connexions of the normal ovary when possible. Only those structures should be removed which were diseased beyond hope of recovery or were a source of danger, function being conserved whenever possible. Ovaries were of metabolic and psychological value to the patient. Both clinical and experimental investigations had shown that ovarian grafting was practicable. In neoplasms it was often possible to preserve a portion of the ovary with its blood-supply, as the tendency of innocent tumours was to grow away from the hilum. Only autogenous grafts should be used; and his custom was to attach a ligature to the graft and keep it in the peritoneal cavity until actually used. He preferred to remove most of the dense capsule of the human ovary. It was not necessary to preserve the superficial follicles, as they were liable to become cystic, and experiments showed that interstitial cells alone sufficed to keep the uterus functional. The material to be used he sliced in a criss-cross fashion on a rubber pad. He usually implanted the graft in a blood-free nidus among the fibres of the right rectus abdominis. The President said that 106 of his 218 patients were between 17 and 30 years of age, and 90 between 31 and 40. In 201 the indication for the operation was salpingitis, in 16 the presence of innocent neoplasms of ovaries. There were five deaths after the operation; in 79 cases the after-histories were not obtained. Menstruation was possible in 113 cases, and it occurred in 80, or 70 per cent. of the cases analysed. In 14 menstruation was absent but the menopause was averted. In the 21 hysterectomy cases menstruation was impossible. Usually menopausal symptoms occurred for a few months after the operation, indicating complete removal of ovarian tissue from its normal site. Sometimes the onset of menstruation was not long delayed, the secretion formed in the grafted tissue being absorbed immediately; but in those cases a fragment of ovary might have been left behind. In some cases menstruation continued normally for years; one patient, now aged 40, had continued to menstruate for 15½ years. Dr. Cheval's use also of grafts of the uterine mucosa was of great interest. Alban Doran and others had stated many years ago that the gonads atrophied after pan-hysterectomy, and in 1906 the President had expressed the view that the uterus had an internal secretion, which he named "uterin"; he now felt less certain of this. As, however, menstruation itself was of importance to the patient, he considered that when performing supravaginal hysterectomy for fibromyoma in young women, some endometrium should be left. Of his 218 cases, the operation was the wedge-shaped fundal removal in 122, the low supravaginal in 27, and total hysterectomy in 18. In an analysis made of his cases up to 1925 of wedge-shaped removal, he found that 68 per cent. of the patients who had an ovarian graft had subsequently menstruated, whereas 89 per cent. of the women in whom an ovary was preserved in situ menstruated. He thought ovarian grafting in the human subject was capable of further improvement, and he suggested that prolan should also be administered to stimulate the functions of the graft. Even at the present time the percentage of successes showed the method to be scientific, practicable, and beneficial.

MEDICAL SOCIETY OF LONDON

A MEETING of this society was held on April 23rd, with Sir JOHN THOMSON-WALKER, the president, in the chair. Dr. JOHN RYLE and Mr. A. J. WALTON read the papers published elsewhere in this issue on

Failures of Gastric Surgery

Dr. EUSTACE CALLENDER said that his experience of gastric surgery was confined to gastro-enterostomy for the relief and cure of duodenal ulcer, and in the cases in which he had advised this operation it had been completely and permanently successful. It was eminently successful in suitable cases, and many failures of gastric surgery could be avoided by careful selection. Much responsibility in this respect rested with the general practitioner, who knew the patient and his family.

Sir WILLIAM WILLCOX, speaking of jejunal ulcer following operation, said he would not put the proportion as high as Dr. Ryle's 10 per cent. Recurrence at the site of anastomosis was very unsatisfactory, and much more difficult to deal with than the original ulcer. He agreed with Mr. Walton that posterior gastro-enterostomy was the safest operation for the "three-way tap cases." Mr. Walton's figures had confirmed the speaker's view that carcinoma very rarely developed in an ulcer.

Dr. G. E. VILVANDRÉ referred to cases in which the appendix was removed for symptoms actually due to duodenal ulcer. Lack of adequate investigation might thus make it necessary to undertake a second operation. Four times he had come across a well-marked gastric ulcer on the small curvature, some distance above the stoma. It was difficult to see how a gastric ulcer could follow a gastro-jejunostomy, but possibly a minute ulcer had been present at the time when the first operation was performed. Or it might be that the conditions causing a duodenal ulcer were still present to cause a gastric lesion.

Mr. DONALD BARLOW said he had always regarded partial gastrectomy as far too radical a remedy for ulcer of the stomach. The condition seemed to demand physiological rest for the organ, both as regards movement and the passage of hydrochloric acid and food over the ulcerated surface. Acidity could easily be neutralised. He suggested that one means of securing this rest would be, after

emptying and cleaning the stomach, to paralyse its nerve-supply temporarily—e.g., by crushing the vagal nerves and allowing them to regenerate.

Dr. ERNEST YOUNG said the use of the duodenal tube would secure a good deal of rest for the stomach. Although bathed in a highly acid fluid, the ulcer managed to heal, and it seemed unnecessary to make the gastric contents alkaline. He agreed with Dr. Ryle that operation was contra-indicated in patients—usually young people—with duodenal ulcer and very rapid emptying of the stomach. Such cases almost always in his experience turned out to be surgical failures. He asked what procedure Mr. Walton adopted for a patient with both gastric and duodenal ulcer. He had found that such patients responded very well to duodenal feeding.

Mr. W. H. OGILVIE thought that the surgical failures in the cases under discussion constituted a more serious problem than some of the speeches might suggest. Few surgeons saw their own failures; in twelve years he had seen only two recurrent ulcers of his own, but had operated upon 30 anastomotic ulcers in patients whose primary operation was done elsewhere. Unnecessary and early operations for duodenal ulcer were responsible, he thought, for the majority of the surgical failures, and surgeons who had duodenal ulcer were generally in favour of medical treatment for themselves. Another cause of failure was the performance of operations which were unsound in theory and unsuccessful in practice; among these he included local resection of ulcers, the Billroth II. operation, and all anastomoses between afferent and efferent loops of the stomach—none of which did anything to counteract the causal acidity. He was also against posterior gastro-jejunostomy, while admitting that technically it could be regarded as an operative gem. It used to be thought that if a patient had no distress for three years after a gastro-jujunostomy he was permanently cured, but he had seen recurrence of symptoms as long as 30 years afterwards. The only way in which excessive acidity could be permanently reduced was the safe procedure of radical gastrectomy—i.e., removing at least four-fifths of the stomach. But before operating one should be certain that medical treatment had been given every possible chance.

Dr. MAURICE SHAW said that ultimately success or failure must depend on the skill with which cases were selected for operation, and which cases should have medical treatment. When surgery had been decided upon, the operation was not the beginning and the end of treatment. By following out a modified diet after operation he had had a large number of radiological cures, and several cases of relapse after operation had been rehealed by medical treatment. There were very few ulcers for which he would not try medical treatment before advising surgery. He asked whether Mr. Walton removed the appendix as a routine measure in gastric and duodenal cases.

Dr. J. R. WYLIE exhibited a table in which were given the results of operation in 492 gastric and duodenal cases. He had found very little evidence that carcinoma started in an ulcer. X rays gave a 75 per cent. accuracy in diagnosis.

Dr. RYLE, in reply, said that anastomotic ulcer was the commonest and most serious sequel of operation, and there were no means of ascertaining its frequency. Probably Mr. Walton's figures were true for expert surgeons, but these operations were being done all over the country, by competent and incompetent alike. He was particularly troubled by the case of high acidity and rapid emptying of the stomach.

Mr. WALTON said he did not make a practice of removing the appendix in these cases. Since 1919 his follow-up department at the hospital had been so active that he had not lost sight of a case. In reply to Dr. Young he said that when a patient had both a gastric and a duodenal ulcer, his procedure depended on the nature of the gastric lesion: if it was a small ulcer he excised it and did a gastro-enterostomy; if it was big and adherent he did a partial gastrectomy. He always gave alkalis for three weeks after operation, and prohibited all smoking.

JOURNALS

Quarterly Journal of Medicine

THE April issue (Vol. III., No. 10) contains the following papers: Increased Carbohydrate Tolerance in Diabetics Following the Hourly Administration of Glucose and Insulin over Long Periods, by Arthur Ellis (London). It was noticed while treating a large number of diabetics that severe cases, mostly young subjects, requiring large doses of insulin, showed wide fluctuations in blood-sugar, marked hyperglycæmia occurring at certain hours, with hypoglycæmia at others. This instability was thought to be due to a depletion of the hepatic glycogen reserves and an attempt was made to increase these reserves by giving hourly glucose and insulin. Surprising results were obtained: first, in the amount of glucose which severe diabetics could deal with in these circumstances; secondly, in the temporary improvement in carbohydrate tolerance which resulted.—A Contribution to the Study of Erythroblasteris: Icterus Gravis Neonatorum, by J. C. Hawksley and Reginald Lightwood (London). An investigation was made into the part played by the blood and blood-forming tissues in this disease; the blood changes were found to consist, in a rapidly developing anæmia, of an hæmolytic type with a brisk response by the hæmopoietic tissues which were intensely stimulated. Evidence is given supporting the view that some cases of idiopathic juvenile cirrhosis and splenic anæmia may have their origin in icterus gravis.—Pellagra in Britain, by Hugh S. Stannus and Charles R. Gibson. A case of pellagra is described at length with a detailed history of onset, progress, and recovery, together with subsequent observation over a period of two years. The geographical distribution is discussed and this is followed by a summary of all the published cases in this country.—Observations of the Speed of the Circulation, by C. W. Curtis Bain. The normal time taken by the blood to travel from the arm to the face is determined by the histamine flush test. The time was found to be fast in hyperthyroidism, effort syndrome, advanced anæmia, and diseases of the lung. In cardiac cases dyspnœa and effort angina appeared when the flush time had slowed to 31 seconds and venous congestion was found in about half of those cases whose flush time was 32 seconds or more. Œdema was an almost constant finding in cases whose flush time was 42 seconds or more, the above figures applying only when the lungs, blood, and basal metabolism were normal.—The Peripheral Circulation in Acute Lobar Pneumonia, by C. Bruce Perry (Bristol). A study of the behaviour of the small vessels of the skin was made in 26 patients suffering from lobar pneumonia with the object of establishing that the circulatory failure in lobar pneumonia was a failure of the circulation at the periphery rather than a failure of the myocardium on the vasomotor centre. It was found that the capillaries of the skin showed an impaired efficiency in their contractility at the height of the disease and that their recovery was slow and was not immediately affected by the crisis. It was concluded that part at least of the circulatory failure in lobar pneumonia was due to this inefficiency of the small blood-vessels. It was further established that the blood pressure was raised rather than lowered during the acute phase of the disease.

REVIEWS AND NOTICES OF BOOKS

Pulmonary Tuberculosis

Medical and Surgical Treatment. By H. MORRISTON DAVIES, M.D., M.Ch., F.R.C.S., Medical Superintendent, Vale of Clwyd Sanatorium, Consulting Surgeon to University College Hospital. With Chapters on Specific Treatment by L. S. T. BURRELL, M.D., F.R.C.P., Physician to the Royal Free Hospital and the Brompton Hospital for Consumption and Diseases of the Chest; and Tuberculosis in Childhood, by W. BURTON WOOD, M.A., M.D., M.R.C.P., Physician to the City of London Hospital for Diseases of the Heart and Lungs. London: Cassell and Co. 1933. Pp. 460. 27*s*.

Mr. Morriston Davies occupies a unique position in this country, not only as a pioneer worker in thoracic surgery, in which connexion his name is as well known abroad as it is at home, but as one who for many years has combined the dual rôle of physician in charge of a sanatorium and thoracic surgeon. The combination of these qualifications in one man is rare, but obviously the physician-surgeon should be peculiarly well fitted to assess the value of treatment by ordinary sanatorium methods and the benefits to be obtained by more active intervention. Mr. Davies's constant insistence that the effects of expectant treatment at a sanatorium should be studied before surgical intervention of any kind is considered will command general approval; but when such methods have failed, the patient may well be prepared to accept immediate suffering and the risks inseparable from surgery in the well-founded hope that surgical interference may lead at any rate to a temporary restoration of health and some prospect of permanent cure. Special interest thus attaches to the author's descriptions of collapse therapy in all its forms. It is an achievement to have condensed so vast a subject into so small a space; less than 250 pages contain all that the general medical reader, and indeed almost all that the chest physician need know of every accredited surgical method employed in the treatment of pulmonary tuberculosis. The reader may feel that some of the operations described, involving three or even more visits to the operating theatre, would be a severe strain even on a phlegmatic patient, and that by the highly sensitive such recurrent mutilations, undertaken as they must be without guarantee of success, would be regarded as worse than death. It is indeed almost with a feeling of relief that we learn that some concession to human frailty is allowed when the position is at last admitted to be entirely hopeless and "it is time to relax some of the rigours of treatment." Mr. Davies's care for detail and therapeutic minutiæ of treatment are very apparent in his sympathetic references to the dying and in his suggestions for the alleviation of terminal suffering.

The golden mean is not easy of attainment. There are those, and even sanatorium superintendents are of the company, who yield to the spirit of defeatism, and rather than risk the death of a patient will incur no risks in treatment. But as Mr. Davies points out, though death from misadventure may thus be avoided, death from disease becomes inevitable. There are also those who lose sight of the ends in their enthusiasm for the means of treatment, and who appear to be more interested in experimental surgery than in the ultimate fate of individual patients. In the hands of the former group valuable lives which might have been saved are sacrificed to the timidity or even to the mental inertia of their medical advisers. But precipitate intervention or surgical interference in cases beyond the reach of surgery entails unjustifiable risks in the one case, and aggravation of suffering in the other. And lives are lost which might have been saved.

Dr. L. S. T. Burrell contributes a useful section on specific therapy, and Dr. Burton Wood has written an admirable chapter which describes and illustrates the various manifestations of pulmonary tuberculosis encountered in childhood.

We warmly commend this book, not only to the attention of special workers in this field, but also to the general practitioner upon whose advice as to the best methods of treatment the ultimate fate of the patient often depends.

The Teaching of Speech

By G. SIBLEY HAYCOCK. Stoke-on-Trent: Hill and Ainsworth Ltd. 1933. Pp. 302.

THIS book, issued by the National College of Teachers of the Deaf, is made up of three parts written at different times and approaching the subject from different angles. The first section, on the methods for promoting the quality of naturalness in the speech of the deaf, is the Braidwood prize essay, awarded to the author in 1928. It is a clear description of the ways in which the teacher of the deaf may induce by cultivation a good voice, resonant, intelligible, and satisfactory as regards speech. The task of the teacher is particularly difficult when a pupil has to be taught to vary the pitch, and Mr. Haycock rightly points out that in all the methods which he suggests the teacher, besides being experienced and possessing a good ear and technical knowledge of the rules of voice production, must have imagination and ingenuity. The second section of the book is a classification of speech sounds with an explanation of their production and development. The common faults of voice production are stated as well as the methods for their correction. The directions given are precise and elaborate; even when labial and dental adaptation are required the author's instructions can be followed. The third section deals with the maintenance of intelligibility and contains practical suggestions as to how intelligibility may be promoted throughout a school career. An interesting addendum to the first section is a note on the value of suggestion in the development of pitch in the voice of congenitally deaf children. The child possesses a larynx and all the accessories for supplying motive power and for increasing the volume and resonance of the laryngeal note, but cannot produce markedly different tones. The only way out of the difficulty, says the author, is for the teacher to act on behalf of the child and devise suitable exercises for the evocation of tones. Then, and with great perseverance, he must proceed on the principle of trial and error instructing the pupil to reject the bad results and hold fast to the good.

Mr. Haycock, who is superintendent of the Langside School for the Deaf in Glasgow, has for many years been recognised as one of the foremost teachers of the deaf not only in England but in all civilised countries, and it is good that he should have placed his range of practical knowledge at the disposal of those concerned.

THE LANCET

LONDON: SATURDAY, APRIL 28, 1934

THE DIFFERENTIATION OF NOXIOUS DUSTS

THE medico-legal significance of dangerous dusts in industry is beginning to assume the international importance which it has long deserved. Following the report of a committee of experts convened last year, a meeting of representatives of governments is to be held at Geneva next month with the object of drawing up a preliminary charter to secure compensation for those who suffer damage due to silicosis, one of the most generally recognised forms of hazard. It is unlikely that asbestosis, another scourge whose evils have been demonstrated more recently, will as yet be granted international status. The sequence leading up to such recognition usually begins with private action—i.e., admission by a firm or group of firms conducting an industry that the workers in it are liable to a risk. This admission is sometimes made spontaneously and sometimes under pressure of local public opinion, and is generally associated with research into the methods whereby the risk can be reduced or avoided. There follow regulations for the protection of persons employed in the hazardous occupation and a scheme of compensation for those affected in proportion to the damage they have suffered. The next stage is the coördination of such schemes in any one country by laws designed to bring the practice of all employers up to the standard set by the best, coupled, as in South Africa and in this country under the Medical Research Council, with active encouragement by subsidy of research into the cause and possibilities of prevention and cure of the pathological condition engendered by the dust. Only when national conscience in several countries has reached a certain degree of sensitivity can international action be hoped for. This stage has now been reached in regard to silicosis, but it is clear that other allied conditions will demand recognition in the future.

In the past the only way of establishing the dangers of inhaling any particular dust was the melancholy one of observing the toll of morbidity and fatality among the workers exposed to it. No criteria could be established in advance of this experience, since the fibrotic process is as a rule slow to develop. The obvious method of study—the exposure of animals to the dust under the same conditions as the workers in mines and factories, or the mimicry or exaggeration of such conditions in specially constructed dusting chambers—has been used by Dr. L. U. GARDNER and his staff at Saranac Laboratory for many years with success, and it is evident from his report for 1933, which has just reached us, that development of this work on a vast scale is contemplated. This technique, however, has the primary disadvantage that the length of time during which exposure is necessary is so long as to be measured in years rather than in months. There is need for more rapid methods of distinguishing potentially dangerous from inert dusts in order that the risk may be recognised before serious damage has been done, and adequate means devised and adopted for the protection of workers exposed to the dust. Incidentally it is highly desirable to investigate biologically the theory recently put forward by Mr. W. R. JONES, D.Sc.,[1] that the presence or absence of sericite—a silicate of potassium and aluminium—in a dust is the factor determining its pathogenicity. His view is based on his detection, by petrography and by chemical analysis, of the presence of sericite in lungs of patients dying from silicosis and his failure to detect this substance in lungs of men dying from fibroid tuberculosis of the lung who have not worked in a dusty atmosphere. His conclusions are supported by the fact that in certain mines in Australia, and in the Kolar gold mines in India, where silicosis is unknown, no sericite is present, whereas in the Rand mines of South Africa it is present in large proportion. If Dr. JONES proves to be right it will be necessary to establish the proportion of sericite that makes a dust dangerous. Thus for many reasons a more humane method of diagnosing dangerous dusts than by watching the fate of employees, and a more rapid and certain method than by the use of a dusting chamber for animals has long been desired.

In a series of communications bearing on this problem published during the last two years Prof. E. H. KETTLE has described experimental methods which in his hands have proved more convenient than dusting chambers for the differential diagnosis of biologically harmful from biologically inert dusts. Of these, the first to be tried was the subcutaneous injection of a suspension of the dust to be tested into the flank of a mouse, which subsequently receives an emulsion of tubercle bacilli into the tail vein. Dusts which are known to be active cause local necrosis and a pronounced cellular reaction in which the tubercle bacilli accumulate and multiply; while the inert dusts bring about little or no tissue reaction and do not favour the growth of the bacilli. A drawback of the method is the production of lesions in the subcutaneous rather than in the pulmonary tissues where the damage occurs in industry, and in recognition of this the next step[2] was an attempt to expedite the formation of pulmonary lesions by intratracheal injection of suspensions of dust. The onset of fibrosis was disappointingly slow, so slow indeed as to raise a doubt whether in the absence of an infective factor it is possible to produce silicosis. When, however, a suspension of even an avirulent strain of tubercle bacilli was introduced with the dust, the reaction to the infection tended to be so pronounced as to mask the early fibrotic changes due to the dust. An emulsion of killed tubercle bacilli was then substituted[3] for one of live bacilli, with the gratifying result that using the active

[1] Jour. Hyg., 1933, xxxiii., 307.
[2] THE LANCET, 1932, i., 1190.
[3] Jour. Path. and Bact., 1934, xxx., 201.

dusts the fibrotic process was accelerated, while the inert dusts remained quiescent in the lung substance or were gradually phagocytosed. A further development of this technique is recorded in our present issue, which promises to provide a neat short cut to the classification of dusts. Where a noxious dust reaches the lung through inhalation or through intratracheal injection, the first lesion to be observed is in the glands at its base. As early as three months after intratracheal injection of a suspension of crystalline silica, or of finely ground flint, changes can be observed in the pulmonary glands, long before true silicotic lesions in the lungs are visible; but that these ultimately develop was shown by the examination of other animals in the same series which were allowed to survive for much longer periods. Control experiments with iron-coated silica and wellingtonite, both being inert dusts, showed merely a copious deposition of dust without any cellular activity or fibrosis. Since these observations were only incidental to the main object of the experiments, which was the study of the later pulmonary lesions, the earliest date in which the changes can be found was not ascertained. But it is clear that in the short space of three months or less it should be possible to estimate whether any given dust is likely to be among the active or inert dusts, though it is not claimed that a dust can be finally incriminated on indirect observations. Application of the method on a large scale might well result not only in a definite preliminary classification of dusts, but in the establishment of standards by which any samples could be tested.

AN AMERICAN HEALTH INSURANCE SCHEME

ONE effect of the profound economic depression in which the American people have been engulfed during the last three years has been to direct the attention both of the lay public and the medical profession to the subject of health insurance, which has hitherto been regarded as unsuited to American conditions and to the national character. The diminution of income from which all classes have suffered has been felt with special severity by those who earn their living by the provision of medical care. In 1930 the average income of doctors fell to 10 per cent. below the level of 1929, the last of the boom years, when in spite of the boom one-third of all doctors had net incomes of less than £500 and one-half less than £760, and the subsequent decline has been much more marked. In some parts of America, and particularly in the West, the troubles of the profession have been intensified by the growth of systems of contract practice carried on as commercial undertakings, in which the services of the doctors are exploited to their detriment for the profit of the lay promoters. These systems had their counterpart 40 years ago in this country, and they exhibit all the evils then described by a special commissioner of THE LANCET (the late Mr. ADOLPHE SMITH) in a remarkable series of articles, afterwards republished in "The Battle of the Clubs," which embodied the results of the first systematic study made of contract medical practice in Great Britain.

Health insurance, then, has already made its appearance in America and seems likely to extend; and many doctors are seriously concerned that its extension should proceed on lines that will lead to results satisfactory both to the profession and to the public. The subject was discussed at the annual convention of the Western Hospital Association at Sacramento on April 9th–13th, which opened with an address on Health Insurance for the American People by Mr. JOHN A. KINGSBURY, secretary of the Milbank Memorial Fund. Mr. KINGSBURY outlined a scheme of compulsory health insurance, organised on a state-wide basis, which would apply to all families with annual incomes of less than £600 or £1000, and be open to voluntary contributors without income limit. The scheme would provide a complete range of medical services including hospital treatment, periodical medical examinations, dentistry, home nursing, prenatal care, laboratory services and immunisations, but no provision would be made for cash benefits to compensate for loss of wages. Mr. KINGSBURY is satisfied that it is possible to frame a scheme of compulsory health insurance which would be within the means of the public and yet pay the practitioner adequate remuneration. The scheme proposes to pay the general medical practitioners an annual sum equivalent to 30*s.* per insured person, the method of remuneration being settled by the organised group of practitioners in each area. It is estimated that the medical services would cost about £5 4*s.* per person annually, of which 20 per cent. would be borne by the State and the remaining 80 per cent. by insurance contributions graduated according to ability to pay. The scheme contemplates that while financial and administrative matters would be dealt with by an executive body the professional services would be under professional supervision, with a joint committee of lay and professional members to deal with complaints and disputes.

The administration of the scheme would be guided by what Mr. KINGSBURY regards as five practical lessons which emerge from the study of European and American experience. These are, in his own words:

"1. Freedom of all competent practitioners who subscribe to the necessary rules of procedure to engage in insurance practice.

2. Freedom of all persons to choose their physician or dentist from among all practitioners in the community who engage in insurance practice.

3. Freedom of insurance practitioners to accept or reject patients.

4. Minimum interference of the insurance system with the private practice of medicine for those who prefer and can afford the private purchase of medical service.

5. Professional control of professional personnel and procedures."

It will be interesting to note the reaction of American doctors to Mr. KINGSBURY's proposals. Their official journal has recently remarked [1] that "American physicians have become accustomed to

[1] Jour. Amer. Med. Assoc., April 7th, p. 1158.

seeing the effects of compulsory health insurance depicted in a roseate hue," and has quoted at length a passage from our own columns [2] describing the hardship arising from the 10 per cent. cut on the 9s. capitation fee—a hardship now fortunately in process of mitigation.

THE CURRICULUM

AT its Dublin meeting the representative body of the British Medical Association received and discussed a report from a special committee on medical education. The report was an interim one; the meeting was not asked formally to approve it but rather to indicate whether there was any fundamental objection to the main suggestions contained in it. That report was gratefully received by the meeting, and during the winter the same committee has continued its deliberations and has now presented [3] a report to the council of the B.M.A. which is to be submitted to the Bournemouth meeting in July for its approval, with the intention then of sending copies to the General Medical Council and other bodies interested in medical education. The interim report has been embodied in the report now presented. No alteration has been made in its main points; it has been rounded off and amplified.

Sir HENRY BRACKENBURY summarised the report at the Dublin meeting. The committee, he said, had defined medical study as properly beginning at the point at which a student starts work upon human anatomy and physiology, and they had had to decide what stage he should have reached before he began those studies. All agreed that the course should not be lengthened, but it was generally felt that the education of the student should have reached a certain standard before he entered on the study of anatomy and physiology, and the first main change proposed by the committee was that the student should give evidences of a heightened educational standard and of being well grounded in the fundamental principles of chemistry, physics, and biology in their application to medicine. Conflicting views have been expressed as to the nature of the instruction in the basic sciences necessary for medical education. There are those who emphasise the acquirement in physics, chemistry, and biology of a certain knowledge of facts which are of direct value to the medical student and practitioner, but the view has prevailed in the committee that the essential purpose of these studies is the training of the student in scientific method and discipline rather than the acquirement of a smattering of technical knowledge. If, as is suggested, two years or thereabouts are given to the study of these sciences along with other subjects of general education—usually English language and literature, a foreign language, and perhaps history—an intellectual equipment and scientific outlook will have been acquired which will enable the student readily to apply these sciences to his own particular field.

After registration, which the committee would wish to see made a statutory obligation, it is felt that too great demands are made on the student's time in the courses of anatomy and physiology as at present taught. These should be taught as interrelated subjects, their main aim being the study of the living rather than the dead body, and it will be generally admitted that it cannot be necessary for the student to dissect every part of the dead body. At this period it is suggested that the student should become familiar with the methods of manual examination and be taught the use of the clinical thermometer and the various "scopes" along with the estimation of blood pressure, the examination of blood, and the analysis of secretions; but not more than five terms should be occupied with this part of the curriculum, and in its present report the committee shows how desirable it is for the inclusion of three special subjects, attention to which has been woefully inadequate. These are genetics, growth, and mental function—and although from the systematic side they could probably be dealt with in a few lectures the committee evidently doubts whether these should be given by the appointed teachers of anatomy and physiology. The most interesting suggestion for the clinical years is that a period of two years and six months on the lines of the present curriculum, but with less specialisation, should close with the final written and oral examination, but that the student should not be eligible to obtain his legal qualification without a further period of nine months of practical experience to be gained in one of five ways: (1) in a resident appointment in a teaching hospital; (2) as clinical assistant in a hospital or clinic; (3) as pupil assistant to an approved general practitioner; (4) as pupil to an approved M.O.H.; (5) in regular attendance at hospital practice in a medical school. It was at this point that the committee was not unanimous, for one of its members felt that it was a bad thing for students to spend their last year hanging about the hospital out-patient department. The report as it stands is a very interesting and stimulating contribution to the revision of the medical curriculum which does at long last seem likely to be taken seriously.

THE council of the British Medical Association has recommended that Sir Richard Stawell, consulting physician to the Melbourne Hospital and Children's Hospital, should be elected president of the Association for 1935–36. The annual meeting is to be held at Melbourne next year in the week beginning Sept. 9th, and at Oxford in 1936. The report of the council issued last week states that the Sir Charles Hastings clinical prize for 1934 has been awarded to Dr. Helen Lukis, of New Malden, for her study of the problems of anæsthesia in general practice. The Katherine Bishop Harman prize given every second year for the encouragement of study and research in avoiding the risks of childbearing has been awarded to Dr. J. M. Munro Kerr, regius professor of midwifery in the University of Glasgow. A certificate of honourable mention was given to Dr. Dora Colebrook.

[2] THE LANCET, March 17th, p. 600.
[3] Brit. Med. Jour., April 21st Suppl., p. 192.

ANNOTATIONS

VITAMIN-A DEFICIENCY

LACK of vitamin A produces its worst effects in infancy, when it may cause blindness from keratomalacia. A lesser deficiency is associated with xerosis of the conjunctiva with night-blindness; and when it is yet milder there may be night-blindness with no other ocular symptom. The proposal is now made that moderate degrees of vitamin-A deficiency should be ascertained by testing the light sense, and working in the pædiatric and orthopædic divisions of the Children's Hospital in Iowa City, Dr. P. C. Jeans and Dr. Z. Zentmire [1] have examined this in 213 children who were considered to be in normal health. For the purposes of the test a Birch-Hirschfeld photometer was used and it was found that 168 of the children had normal recovery of light adaptation after 10 minutes in the dark. The other 45, however, had an abnormally slow recovery, and to discover whether this depended on a deficiency of vitamin A 21 of them were retained in hospital. Here it was found that after periods varying from 4 days to 6 weeks (average about 12 days) on a diet including three teaspoonfuls of cod-liver oil daily they all showed normal response to the dark-vision test. These figures suggest that about one-fifth of all the children tested had some degree of vitamin-A deficiency, and though they were to some extent a selected group, being physically afflicted members of poor families, Jeans and Zentmire have clearly made out their case that moderate degrees of night-blindness in children are not uncommon, may pass unrecognised, and can readily be detected and cured.

The whole subject of vitamin-A deficiency in children is reviewed in a very helpful way by Dr. Helen Mackay in the April number of the *Archives of Disease in Childhood*. After quoting G. A. Dawson's observation that in 1928–29 there were about 100 cases of night-blindness and xerophthalmia attending nursery and elementary schools in Darlington, she goes on to mention observations of her own which suggest that slight grades of deficiency are also common in infants. These observations (to be fully described in the next issue of the same journal) concern the relation of such deficiency to the minor infections of the skin so often seen in children of the hospital classes. Though in Mackay's opinion there is no satisfactory evidence that lack of vitamin A is responsible for any of the usual respiratory or intestinal infections of children in this country, she has come to regard susceptibility to skin infections as "probably the first sign of vitamin-A deficiency in infants." It is possible, she adds, that the relatively high incidence of such infections in the lower social strata is more a matter of diet than of soap and water.

INFECTION AND DENSITY OF POPULATION

General R. Erhardt, of the Swedish Army Medical Service, has recently [2] drawn attention to the effects of density of population on the incidence of certain diseases such as angina faucium and streptococcal infections in general. In 1910, 75·2 per cent. of the Swedish population lived in rural areas. By 1930 this ratio had fallen to 67·5 per cent. It is probable that this tendency of the Swedes to collect in the towns is reflected in the frequency with which angina faucium occurs in the Swedish army. Between 1921 and 1930 approximately 17 per cent. of all the illnesses in the Swedish army belonged to this category. Incidentally the same disease takes first place among Finnish recruits, and it has been calculated that more than 50 per cent. of all the deaths in the Finnish army are due to streptococcal infections. Dr. Erhardt draws special attention to recent changes in the concentration of his fellow-countrymen in hospitals and allied institutions. While the total population of Sweden rose from 5·3 millions in 1907 to 6 millions in 1927, the number of general hospital beds rose in the same period from 8580 to 18,085, the number of sanatorium beds from 892 to 6309, the number of fever hospital beds from 3593 to 6962, and the number of mental hospital beds from 6898 to 12,118. This enormous rise in the number of institutional beds has been accompanied by an even more striking rise in the number of persons employed by hospitals and allied institutions. Taking a certain typical military hospital, Dr. Erhardt shows how, between 1910 and 1930, the number of persons employed on the hospital staff has risen from 30 for every 100 beds to 53. Dr. Erhardt discusses at considerable length and with the aid of charts the structural modifications he would like to see introduced by hospital architects with a view to minimising as much as possible a concentration of human beings which promotes infection.

[1] Jour. Amer. Med. Assoc., March 24th, 1934, p. 92.
[2] Nordisk Medicinsk Tidskrift, Feb. 10th.

A FÜLLEBORN MEMORIAL NUMBER

THE Tropical Institute at Hamburg is the abiding memorial of Friedrich Fülleborn but, as we have already indicated,[1] his pioneer work was in helminthology, and it is proper for a special parasitology number of the *Chinese Medical Journal* (November–December, 1933) to be dedicated to him. Among its many papers the filarial group of worms is well represented. L. C. Feng describes a new investigation into the differences between *Microfilaria bancrofti* and Brug's *Mf. malayi*, the material coming from Huchow, in the Chekiang Province; he speaks highly of methyl-green pyronin as a simple, lasting stain with good differential characters. It merits comment that though this embryo has been known for seven years no serious effort has been reported to find the adult worms by excision of glands during life, a method which has given such happy results in F. W. O'Connor's hands, and seems capable of modification to admit of the escape of the worms themselves for ready examination. S. M. K. Hu has shown, in collaboration, how ready an intermediate host is *Culex pipiens pallens* for *Wuchereria bancrofti*; and H. F. Hsu and J. Y. C. Watt that guinea-worm is indigenous in dogs in Peiping, and that four species of cyclops there are effective intermediate hosts, so that the causes of the happy escape of man merit investigation. R. Hoeppli is entertaining in a paper dealing with many curiosities in human parasitology. There was, for instance, an old belief in Europe that parasites were present as eggs when Adam and Eve were in Paradise, but that development was stayed till the eating of the forbidden fruit; there was a notion 150 years ago that tapeworms are disturbed by music; and there was the almost equally old comment that pains must be taken to discover the kind of instrument which they most dislike so that it might be used as a vermifuge. Among many facts which cannot at present be explained is placed microfilarial periodicity, it being noted that O'Connor's laborious and

[1] THE LANCET, 1933, ii., 715.

careful work speaks for Clayton Lane's theory that it is due to simultaneous cyclical parturition of the female worms; but more work on this matter is needed. There are several papers dealing with tissue changes caused by parasites, for instance, tumour growth and those caused by kala-azar and *Clonorchis sinensis*, the last furnishing yet another instance where the extent of microscopical damage outstrips the appearance of clinical symptoms.

Finally, Hoeppli furnishes a sympathetic appreciation of Fülleborn. An army medical officer (he was wounded on the Western Front during the Great War), he was naturalist, helminthologist, and brilliant lecturer, had curious and complete incapacity to draw and a literary style which was complicated; he was a great conversationalist, fine cook, and persistent smoker—a many-sided and very human personality.

DAWSON WILLIAMS MEMORIAL PRIZE

THE Dawson Williams Memorial Fund was established by voluntary subscription in 1928 in commemoration of the late Editor of the *British Medical Journal*. Its object is the award of a prize every two years, or at longer intervals, in recognition of work done in connexion with pædiatrics. The fund is administered by the following trustees: the Presidents (for the time being) of the Royal College of Physicians of London, the Royal College of Surgeons of England, the British Medical Association, the Royal Society of Medicine, and the Section for Disease in Children of the Royal Society of Medicine, and the Editor of the *British Medical Journal*. There have been two previous awards of the prize—namely, in 1930 to Dr. F. J. Poynton, for his work on behalf of rheumatic children, particularly with regard to the establishment of special "rheumatic centres"; and in 1932 to the late Sir Robert Jones for his work in connexion with the pædiatric side of orthopædics. The trustees have decided to make the third award this year to Dr. G. F. Still in recognition of his work for sick children, and with the consent of the council of the British Medical Association the prize (a certificate and cheque for 50 guineas) will be presented by the President of the Association on the occasion of his presidential address at Bournemouth on Tuesday, July 24th, 1934.

VOMICÆ TREATED CONSERVATIVELY

BEFORE the Medical Society of Davos Dr. F. Bauer has related his experience[1] of the spontaneous disappearance of tuberculous cavities in the lung. Speaking after long residence in Alpine sanatoriums Dr. Bauer has retained his belief in the ability of the hygienic-dietetic régime to deal with the severe destructive forms of tuberculosis of the lung, and he besought his colleagues not to forget the wonderful successes attained before the introduction of collapse therapy—results still within the clinician's reach. For himself he could not overlook the troublesome complications resulting from artificial pneumothorax; patients who had recovered after collapse therapy did not, he thought, regain respiratory function as completely as those who had not undergone any surgical procedure. Dr. Bauer is a warm supporter of the standpoint of Dr. Fernand Cardis of Leysin, who demands a period of strict conservative treatment lasting two or three months before beginning pneumothorax treatment. Even with afebrile patients he thought this period was best spent in absolute rest in bed. It should be long enough to show whether there was a good tendency towards fibrosis. In any case it gave time for a diminution of toxic absorption and for improvement in the condition of the remaining foci in the same or in the other lung. He thought the danger of hæmoptysis during this period had been very much exaggerated; he had very rarely seen it occur. The likelihood of the pleura becoming prematurely adherent—the other objection raised—was very slight in patients kept strictly quiet in bed. Recently he had occasion to inquire again into the subsequent history of the 29 patients with lung cavities, treated conservatively in the Park (late Turban) Sanatorium, reported on by H. Wohlers[2] four years ago; 21 of these patients now, after an average period of six years, had remained well, 18 of them following their normal occupation.

[1] Acta Davosiana, April, 1934.

OPTICAL CRAFTSMEN

THE last day of the recent London meeting of the Ophthalmological Society of the United Kingdom was taken up by a tour of inspection of optical workshops. The Association of Dispensing Opticians had extended an invitation to the society to inspect two of the larger factories owned by its associates. These two firms were obligingly at work over the Saturday afternoon in order that the congress members might see in progress the various processes in the manufacture of spectacle lenses, safety glass, frames, and ophthalmic instruments. In these days of mass production the visitors must have been refreshed by the extent to which this work remains a craft. It is true, of course, that the ophthalmologist's prescription is translated by the technical and mathematical lore of a generation into precise instructions to a machine, but even so the man or woman in charge of the machine has enough scope to take pleasure in the work. The materials themselves are attractive, consisting primarily of optical glass, emery, and rouge; the addition of pitch with which the lens is fixed firmly into its bed before grinding begins affords additional pleasure owing to its plasticity to the younger members of the staff who use it. It must often have occurred to the unlearned to wonder how an optical prescription which may contain both cylinder and prism, as well as two spherical surfaces, can be readily and precisely translated on to a spectacle glass. It is interesting to know that where bifocal glass is ordered the work always begins with differentiating between these two spherical surfaces, the deeper of which is first ground and then filled in with some protective material while the flatter surface is ground. When this has been completed the lens is taken out of its bed and turned over to take the rest of its grinding on the other surface. Checking of the curvatures requires instruments of extreme precision, and these are for the most part designed and made in the same workshops. The transparency of the working material has this advantage, that instruction about the axes of the cylinder can be affixed with white cement to the surface of the glass which is not being worked at the time, and the white letters stand out vividly against the background of pitch. There must be little or no occupational risk, as the grinding is all done on a wet surface; in the only department in which the lenses are clipped to shape the workpeople wear protective masks. The material for frames also affords much scope for craftsmanship, especially in working the shell of the turtle, which still remains the most popular frame in use in spite of the growing

[2] Ann. de Méd., 1930, xxviii., 397.

variety of more plastic and less expensive materials. The only regret in the ophthalmologist's mind must be that the refractive error and the eye for which it is prescribed are not susceptible to as accurate an analysis as the spectacle glasses; in fact, compared with the product of the modern optical workshop the eye itself is becoming a little démodé.

INTRACRANIAL TUMOURS

A RECENT analysis by Dr. Leonard B. Cox[1] of a series of 135 cases of intracranial tumour collected in Melbourne, shows that the same types occur in much the same numerical proportions as obtain both in this country and in the United States. An exception, however, is found in granulomatous tumours, which are much rarer in Victoria. Cox's series does not include any of these tumours; they form 2·2 per cent. of Cushing's much larger series and were undoubtedly far more frequent, in this country, at any rate, during last century. The difference is attributed to the greatly lowered incidence of tuberculous infection in Australia and to the more efficient prophylactic and hygienic conditions of the present day. Most of Cox's specimens were obtained at necropsy. This, no doubt, accounts for the fact that metastatic and invasive tumours form 14·1 per cent. of the total, whereas they formed only 4·2 per cent. in Cushing's collection, which is essentially that of a practising surgeon. There can be little doubt, from consideration of statistics published elsewhere, that the former figure gives a more accurate estimate of the incidence of secondary intracranial growths.

The gliomas are analysed at considerable length. Those who are interested in the cytological problems of this group will find a more detailed account in a previous article by the same author.[2] While adopting the classification of Bailey and Cushing and appreciating its value as a means of dividing the gliomas into groups having a definite clinical and histological picture, Cox is critical of its theoretical implications. He concludes that "a classification based on the similarity of the neoplastic cells to those observed in histogenesis does not present an exact picture of these tumours." Most histologists will agree with him. In practice a certain number of specimens present insuperable difficulties to classification. Amongst the different types of glioma that known as glioblastoma (or spongioblastoma) multiforme was most frequently encountered in the Melbourne series. This tumour arises as a rule in the deeper parts of the cerebral hemispheres and displays a highly malignant character. Cox, therefore, takes the reasonable view that the surgical removal of such tumours is in general impracticable. He lays himself open to challenge, however, in suggesting that such attempts are never feasible. It occasionally happens that a tumour of this type is small, superficial, and reasonably circumscribed. Such examples have been successfully removed, but it is not yet known with what ultimate results. The medulloblastomas, which occur principally in the cerebellum in young children, are also highly malignant and hence unfavourable from the surgical standpoint; they are, however, susceptible to X ray treatment. In the Melbourne series a few examples were found in adults, and evidence was obtained that in some of these the rate of growth is much slower than is the common expectation. The meningeal tumours, or meningiomas, lend themselves readily to surgical removal provided that vigorous measures are taken to prevent the exsanguination of the patient. Cox finds that recurrence of the tumour often takes place even when its removal was thought to be complete. This, again, is a point on which individual experience is likely to vary. These tumours are almost always histologically benign, and the factors that are responsible for recurrence are as yet little known.

Diagnosis of a metastatic tumour is generally a signal for inactivity as far as surgical intervention is concerned; some surgeons hold, however, that if the cerebral metastasis is solitary and accessible it may be worth while attempting its removal. Amongst other guiding principles on treatment Cox suggests that "in practice it is wise to do a decompression operation over the site where a tumour is considered to be growing, even if a pessimistic view be taken of its nature. . . . . By an examination of the exposed brain there is less chance of being confronted at autopsy by a favourable tumour where an unfavourable one was diagnosed. In each of two cases in this series, an operation for carcinoma had been performed prior to the onset of cerebral symptoms. It was expected that the cerebral tumours would be metastases, but in each case a glioma was found at autopsy." Even if the tumour should not be wholly removeable there are substantial chances both of relief to the patient and prolongation of his life.

[1] Med. Jour. of Australia, Feb. 10th, 1934, p. 182.
[2] Amer. Jour. of Path., 1933, ix., 839.

THE PERILS OF THE MILK-SUPPLY

A DEPUTATION from the People's League of Health was received by Sir Hilton Young, the Minister of Health, and Mr. H. E. Dale, representing the Ministry of Agriculture, on Wednesday last, April 18th, the object of the deputation being to urge upon the Government the need for efficient protection of children from milk-borne diseases, and especially from the danger of contamination with tubercle. The deputation had its origin in the scheme of the Government for the provision of milk for children in State schools, and the speakers presented the difficulties under which medical practitioners laboured in advising the use of cow's milk with a knowledge that it was improperly controlled. The deputation having been introduced by Dr. C. O. Hawthorne, chairman of the Council of the League, Lord Moynihan emphasised the fact that the existing supply of milk, defined by him as "almost a perfect food" was not safe, and gave it as his opinion that, while the eradication of tubercle from cattle would lead to a safe supply, it was impossible to wait for such a reform; for the present all milk other than "Certified" and "Grade A" (tuberculin tested) milk should, he said, be pasteurised. Many representative speakers followed, pointing out the wide existence of milk-borne infection, emphasis being laid in more than one quarter on the fact that if pasteurisation is adopted the procedure should be carefully controlled. Practical evidence of its utility, however, was afforded by Sir Pendrill Varrier-Jones, Sir John Robertson, and others. The unhygienic methods of milk distribution in London and elsewhere came in for notice, and finally Miss Olga Nethersole, the founder of the League, read communications from unexceptionable authorities, all stressing the dangers of milk-borne disease. Sir Hilton Young pointed out to the deputation that they were preaching to the converted, while he dwelt on the importance of educating the public in regard to milk-supply. Here he recognised the influentially supported work of the League to be of the greatest value. He agreed that all possible steps to remove infection from herds must be taken, but allowed that for the present reliance must be placed upon further measures for the protec-

tion of the milk-supply. And he reminded the deputation that the Government were prepared to spend £750,000, spread over the next four years, in support of a campaign for securing a purer milk-supply.

SANITY IN A MENTAL WARD

THE Sheffield coroner recently held an inquest on a woman of 60 who died from uræmia in the mental ward of a public hospital. She had been transferred there because her doctor had given a certificate stating that she was of "unsound mind." He had been treating her for bronchitis, she had become delirious, and he had overlooked the renal condition. The coroner commented on the difficulties in lunacy law administration and seemed to imply that as the patient had uræmia as well as bronchitis her delirious condition might have been treated differently and not in a mental ward. With such a contention very few of those responsible for general medical wards would agree. Ideally it would be possible to have two wards in a general hospital in each large centre reserved for delirious and confused patients whose mental symptoms followed upon physical disease. The benefit of this in puerperal cases is obvious, and the arrangement might do more than satisfy the Sheffield coroner. It might, for instance, lead to general physicians and psychiatrists working in closer association; some general trained nurses would acquire greater acquaintance with some forms of mental disorder; and the medical students would have occasional opportunities of seeing acute psychoses without being wholly dependent upon journeys to distant hospitals. Such schemes could not be carried out simply. They entail easily recognised difficulties, but so far as the student is concerned the divorce of ordinary clinical experience from his acquaintance with acute psychotic and psycho-neurotic disorders leaves him unprepared for the exigencies of practice when at any time he may need to deal with them.

Other reflections are provoked by the coroner's remarks. Have we really reached a point at which we do not label as insanity any disorder to which physical causes contribute? Fortunately the idea long prevalent that the insanities stood apart from general medicine is displaced in the medical mind by the recognition that all the available information about the physical condition of the patient is germane to the question why his behaviour is what it is. The immediate denial of physical causation in a psychotic patient examined only once is no longer possible. Such a cause is recognised in the syphilitic psychoses and some other obscure agent *may* be present in other mental patients. If the coroner's remarks have stimulated both psychiatrists and general practitioners to hunt for physical determinants of abnormal behaviour they will do nothing but good. From the layman's point of view two aspects of the interrelation between the physical and mental can be observed. These are a tendency to ascribe all mental disorders to a physical cause, an opinion which will enable him to avoid any inquiry as to how far environment or earlier maladjustments have contributed to a psychosis. The other—almost an opposite—tendency is to regard the senile psychoses as comparable to the biogenetic disorders. Both opinions tend to confuse those who are seeking to assess the degree of hereditary taint. The first predisposes to an optimism which subsequent events too often nullify. The second tends to divert inquiry from the arterial changes accompanying senile psychosis when further investigation might reveal symptoms due to the removal of inhibitions and the previous behaviour pattern of the patient.

One final question. Are we to rest satisfied with the fact that a uræmic patient became delirious? Or must we not go on to inquire whether the delirium is a matter of blood-chemistry or of psychic structure or both? We do not know why one cardiac patient becomes psychotic whilst another with a severe degree of decompensation remains mentally stable. These and many questions like them await a serious answer. Mental heredity only satisfies a certain number of such cases. If the Sheffield incident arouses that closer association between general physician and psychiatrist which is a corollary of the coroner's remarks, further knowledge of prognosis and psychopathology should be forthcoming.

GENITO-URINARY SURGERY IN AMERICA

THE printed transactions of the American Association of Genito-Urinary Surgeons record the trend of thought in this important specialty. In Vol. XXVI. which has just reached us H. A. Fowler and J. A. C. Colston record their views on primary carcinoma of the ureter and primary tumours of the ureter respectively. The rarity of this condition is shown by the fact that the records of the Bradey Urological Institute comprising over 22,000 urological cases contain only three instances of primary tumours of the ureter. A survey of the literature on the subject shows that the vast majority of these are of epithelial origin and of the papillary type. Squamous-celled epitheliomata are rarer and are usually found in association with chronic irritation from stones or infection. The most valuable diagnostic sign is obstruction to the passage of a ureteric catheter followed by copious hæmorrhage, and the appropriate treatment nephro-ureterectomy.—J. F. McCarthy and J. S. Ritter write on bacteriophage therapy in genito-urinary infections. Their greatest successes were in 16 cases of staphylococcal septicæmia, of which six recovered. The writers consider that bacteriophage therapy is a valuable prophylactic measure in the prevention of kidney infections secondary to carbuncle or furunculosis, as well as a means of treatment of established infections of the urinary tract. They have devised special instrumental methods for direct intraprostatic administration as well as for injection into the seminal vesicles.—J. R. Caulk in discussing prostatic resection claims that the electro-cautery is a safer method of removing tissue than the high-frequency current. He bases this opinion on the fact that high-frequency current applied for more than a second may do considerable damage to the surrounding tissues to a depth it may be of over a centimetre. A point of practical importance that may be deduced from this is that it is advisable in carrying out prostatic resection to shift the scene of activity from one portion of the gland to another, in order to avoid accumulative heating of any one segment. Caulk urges that the smallest effective current should be applied for the shortest possible time and that if bleeding occurs it should be controlled with coagulation currents which are far less penetrating and damaging. In his opinion some of the cases of incontinence that have followed resection may be due to the devitalising action of heat on the sphincter.—Writing on the subject of bony metastases secondary to carcinoma of the bladder, R. C. Graves and R. E. Militzer state that these are more common than is usually supposed; apart from the pelvis, there would seem to be no particular predilection for any bone. Bony metastases from carcinoma of the bladder are usually of the osteoclastic type although some cases show

osteoplastic changes.—G. C. Prather and E. C. Crabtree contribute an interesting article on the lone kidney in pregnancy, based on a total of 296 nephrectomised women and 365 pregnancies. Although the surviving kidney showed the dilatation changes in the pelvis and upper ureter that are so familiar in pregnancy, renal function tests proved the existence of an adequate margin of safety. Accumulated statistics give a mortality-rate of only 1·09 to 1·4 per cent., proving that as a general principle nephrectomy is not a contra-indication to pregnancy.

POST-OPERATIVE INFECTION OF THE PAROTID GLAND

MASSABUAU, Guibal, and Bert in a recent communication [1] distinguish two types of parotiditis occurring as a sequela to operation. In one, suppuration of the parotid is an incident in the course of a general pyæmia, and carries a very grave prognosis. Parotiditis developing during convalescence from a straightforward surgical procedure (such, for example, as appendicectomy and sub-total hysterectomy in the two cases quoted) usually runs a more favourable course, although subject to the danger of certain rather common complications. Of these the three most important are facial paralysis, temporo-mandibular arthritis, and perforation of the wall of the external auditory meatus. Facial paralysis is not usually due to direct injury either by the incision of the gland or by spreading gangrene in its substance, but, according to Massabuau, is caused by compression, or by œdema of the nerve sheath. It is a lesion from which a full recovery is to be expected, even though it may be a tardy one. The paralysis lasts, on an average, from three to six months. Temporo-mandibular arthritis may be further complicated by the supervention of subluxation of the joint. In a patient observed by Massabuau, in whom such a subluxation was associated with facial paralysis, there was what he calls "une physionomie très particulaire." Perforation of the anterior wall of the meatus seems to be a comparatively common complication. Raby, quoted by Massabuau, gives the incidence as 34 out of 100 cases. The pus appears to take the line of least resistance to the postero-inferior part of the gland and then to track through at the attachment of the cartilage to the bone. This perforation of the meatus becomes apparent about the tenth day of the parotiditis and does not seem to be of very serious import; it may occur despite early incision. Massabuau discusses the various theories of the ætiology of post-operative infection of the parotid. He holds that Stenson's duct is definitely inculpated as the portal of entry. Inflammation starts in the centre of the gland and is multipolar in spread, the peripheral parts being only secondarily infected. The flora of the infected gland is that of the mouth. Finally, experimental infection of the duct has been much more successful in producing parotiditis than has experimental infection of the artery of supply. Granted that the infection spreads from the mouth the incidence of the disease must be traced either to buccal infection (gingivitis, dental caries, stomatitis), to lowered general or local resistance, or to alteration in the excretory function of the gland. There would appear to be reasons to suspect several of these factors operating in any one case. Suppression of salivary secretion may be of importance, sometimes in relation to the absence of the normal stimulus when the patient is given fluids by routes other than the mouth. Various factors associated with operation, such as purgation, vomiting, hæmorrhage, and excessive secretion during ether inhalation, may deplete the patient of fluid and be followed by a diminished salivary secretion. The possibility of reflex inhibition has also been mooted. Passive congestion, as by lying constantly on one side of the face, or injury to the parotid by forceful traction on the mandible during anæsthesia have also been blamed. Treatment consists essentially in early superficial incision of the infected gland with opening of the deep part with forceps. Pus is not always found, but discharge is likely to appear in abundance within the following two days. Other forms of treatment proposed, as injections of pilocarpine, compression of the gland and bacteriophages, are generally regarded as of subsidiary importance.

[1] Arch. de la soc. des sci. méd. et biol. de Montpellier, February, 1934, p. 94.

THE PREVENTIVE ASPECTS OF MEDICINE

THE course of lectures on the preventive aspects of medicine which was held on Thursday afternoons during the winter session at King's College Hospital, and was open to medical men as well as to students, is to be resumed on May 3rd, when Col. L. W. Harrison will lecture on the Prevention of Venereal Diseases. Four subsequent lectures will be delivered to complete the series, on May 10th, 17th, 24th, and 31st, as follows: Prevention of Accidents, by Prof. Millais Culpin; Prevention of Mental Diseases, by Dr. Edward Mapother; Principles of Immunisation as applied to Preventive Medicine, by Prof. W. W. C. Topley, F.R.S.; and Public Agencies which exist for the Prevention of Disease, by Dr. Allen Daley. These concluding lectures, like their predecessors in the series, will be published in THE LANCET.

ON Tuesday, May 1st, and Thursday, May 3rd, at 5 p.m., Dr. C. H. Andrewes will deliver the Oliver-Sharpey lectures of the Royal College of Physicians of London. His subject is viruses in relation to the ætiology of tumours. Prof. O. L. V. de Wesselow's Croonian lectures, on arterial hypertension, are to be given on June 5th, 7th, and 12th.

POST-GRADUATE HOSPITAL COURSES IN SWITZERLAND.—The International Hospital Association is arranging a post-graduate course in Switzerland from Aug. 15th to 23rd, to be followed by a study trip through the canton of Grisons. The course is divided into three sections for which separate tickets will be issued. Section A opens with study committees at Basle on Aug. 15th, followed by hospital visits in Basle and Zurich on the 16th and 17th, and in Lucerne on the 18th. Section B opens at Berne on Aug. 19th with an official lunch followed by visits to local hospitals on the 20th and 21st, and a visit to Leysin where Prof. H. Rollier will receive on the 22nd and 23rd. Lectures will be given by well-known representatives of official bodies and hospitals, and a small scientific and industrial exhibition will be provided at Berne. Section C is a study trip on Aug. 23rd, passing through Brigue and Coire to Arosa where Dr. Gähwyler will lecture and Dr. Fonio demonstrate plans for a cantonal hospital; on the 26th Dr. Nienhaus will lecture at Davos; on the 27th Dr. Enderlin will talk at Schuls; and on the 28th the baths at St. Moritz will be visited under the conduct of Dr. Bernhard. Railway concessions have been obtained, and the cost of the course will not be greater than those of previous congresses at Vienna, Knocke, or Frankfort-on-Maine. The chairman of the International Hospital Association is Dr. G. von Deschwanden (Lucerne). Inquiries should be addressed to the Veska-Bureau, Obergrundstrasse 13, Lucerne, Switzerland.

PROGNOSIS

A Series of Signed Articles contributed by invitation

IV.—THE PROGNOSIS IN ENLARGEMENT OF THE PROSTATE

The Basis of Prognosis at the Initial Consultation

USUALLY it is an increased frequency of micturition which leads a man whose prostate is causing obstruction to seek advice from his doctor. Sometimes it is the dreadful pain of acute retention, at others the inconvenience of incontinence. Whilst the last condition demands without delay a surgical operation with its attendant risks, this is not necessarily true of the former. To take first the common case of bladder irritability, the gravity of outlook will vary within very wide limits. The practitioner must make the supremely important decision whether his patient's life will be curtailed by delay or whether, on the other hand, it may be possible to arrange that he may continue to pursue his usual avocations in safety, physical comfort, and mental repose. The primary consideration is the condition of the kidneys, and here may be emphasised the very great assistance to be obtained from the simple measurement of the residual urine. Should this be less than three ounces it is unlikely that renal impairment has occurred. But this opinion should be checked by information given by the amount of urea in the circulating blood and the urea-concentration test. If these are within normal limits the patient may be reassured. He need not face an operation. By careful living, by the avoidance of acts which cause congestion of the prostate he may live for some years with little or no discomfort and perhaps the necessity for operative treatment may never arise. On the other hand if the urine is infected, operation should be urged as the risk of extension to the kidneys is greater than the risk of surgical treatment.

To estimate the probable progress of the disease by the feel of the prostate per rectum is almost impossible. The hardness of the malignant prostate will reveal the inevitable steady increase in size, but many patients live for three or four years after a malignant prostate has first been diagnosed. With the soft adenomatous prostate, size is no criterion of the degree of obstruction. Indeed the central intravesical enlargement which early produces serious hindrance to urinary outlet is imperceptible by rectal palpation. In such cases of bladder irritability with impalpable enlargement, a cystoscopy must be performed to estimate the amount of obstruction or even the cause of it before any prognostic pronouncement can be made. The intravesical nodule causes so much obstruction that operation must usually be advised. Certain patients whose kidneys are unaffected, and whose residual urine may be no more than an ounce in quantity, suffer in health from the broken sleep due to great frequency. Operation with its attendant risks must be recommended in these conditions.

The man whose first symptoms are due to acute retention must be just as carefully examined when his acute condition has been relieved by catheterisation, before treatment can be planned or prognosis estimated. Curiously enough such patients sometimes come well out of such clinical scrutiny and with care may, without any discomfort whatever, continue their ordinary lives for a year or more before further symptoms arise. An attack of acute retention does not necessarily condemn a man to an operation. The outlook is dependent, as in the irritable bladder type, upon the damage which has or has not been done to the kidneys.

When the patient who presents himself is dribbling urine, with the bladder distended to overflow, serious renal deficiency is always present. These are the worst cases from that point of view, but on the other hand, power of recovery of kidney function is astonishingly great and in such cases the urine is seldom infected, so that the outlook is not too grave.

The Outlook following Surgical Operation

The immediate concern of a man about to subject himself to surgery as a relief for prostatic symptoms is his prospect of surviving the operation. Although within recent years careful preparation and selection has very much lowered the risk of prostatectomy, it must still be regarded as a hazardous procedure. The patients are generally old, frequently decrepit, their kidneys are damaged, their heart musculature enfeebled, they are often anæmic and have lost much of their powers of reaction towards infection. Taking into account all these unfavourable features it is truly remarkable that as low a mortality as 3·4 per cent. has been recorded in a large series of cases. The general mortality amongst expert operators is probably considerably higher than this, from 4 to 8 per cent. The mortality risk depends largely upon the condition of the patient when he seeks surgical aid. If there has been long-standing back pressure and infection has supervened the risk of death must be much greater, 10 to 20 per cent., whereas early in the disease it is certainly less than the average. Since the poorer members of society are apt to neglect the earlier signs of disease, hospital statistics are usually less favourable than those of series of private patients, though the conditions under which the former are operated upon are as good.

If it is decided that a two-stage operation is necessary because the blood-urea cannot be brought down to a reasonable figure by catheter drainage or because of serious sepsis, the practitioner must take a graver view of the case and not lose sight of the fact that the simple cystotomy of the first stage is attended with a distinct mortality. Yet even desperate cases, patients with a blood-urea of over 200 mg. per 100 c.cm., may be so restored to health by the preliminary cystostomy as to be able to negotiate the subsequent prostatectomy successfully, which may not be possible for many months: and it is probably true to say that the risk of the second stage is less than that of prostatectomy in one stage.

The principal causes of death after prostatectomy are uræmia, sepsis, hæmorrhage, and lung complications. Urinary retention can be remedied by adequate preliminary drainage, but some of the ill-effects of chronic uræmia are not so easily overcome. Patients who have had an original high blood-urea percentage seem more prone to infective complications, the two most serious of which are pneumonia and pyelonephritis. No amount of care in irrigation of the prostatic cavity left after prostatectomy would seem to protect them from some amount of infection in this situation, and it is apt to spread upwards to the kidneys. Serious hæmorrhage may occur even after simple cystostomy from rupture of a dilated vein in the mucosa of the bladder overlying the gland. Hæmorrhage is a menace at the actual nucleation

itself for two reasons: it is not under complete control and the patients, owing to the renal changes, frequently have a lowered hæmoglobin content. An operation done on a patient with only 60 per cent. hæmoglobin is associated with a very serious risk. Hence the importance from the prognostic standpoint of making this estimation. If serious sepsis of the prostatic cavity occurs there is the subsequent risk of secondary hæmorrhage. Myocarditis increases this danger. Thickened vessels with low blood pressure and feeble heart sounds are of serious import.

The remote concern of the patient is with his ultimate condition of health. What prospect has he of his condition being one of betterment for all the risk he will have to undergo? In the first place he may be confidently told that his tenure of life, if he survive the operation, will certainly be longer than if he refuses surgical aid. And, secondly, he may be assured that in general health and well-being he will stand a very great chance of approach to the normal. That this claim can be substantiated is shown by all statistical investigations, the most recent of which (F. S. Crockett and W. W. Washburn) may be quoted.[1]

One hundred patients were questioned. Ninety-three per cent. answered that their general health was better. As far as the difficulty in beginning micturition went, 91 per cent. complained of none; 9 per cent. had some, and a stone was found in some of these. Seventy-two per cent. had no dribbling; 19 per cent. a little after voiding; and 6 per cent. dribbling at all times. Frequency at night was not abolished in so great a proportion of cases. Only 36 per cent. had no nocturia, but 19 per cent. got up only once or sometimes not at all; 15 per cent. got up twice or less. When asked if the operation was worth going through for the benefits obtained, 95 per cent. said they were satisfied, and actually 99 per cent. said the effort was worth while.

It will thus be seen that many of these patients are restored to complete health. However, in a number it is difficult to get the urine free of infection and this may never be accomplished. Nocturnal frequency may well be due to this cause.

Stricture after prostatectomy is now very rare. A few cases of persistent urinary fistula occur. It is sometimes difficult to assign a cause for this. Sometimes it seems due to sepsis in the space of Retzius or even of the pubes; occasionally it has been cured by the removal of a diverticulum or calculus. The chance of a fistula is lessened if the bladder be opened as near its apex as possible. It is a rare complication.

A very troublesome and painful incident is the onset of *epididymitis*. This may follow the passage of an instrument, but occurs quite independently of such manœuvres, sometimes when the patient returns home. It may be quite serious, leading to gangrene of the scrotum and even death from sepsis. It seems to be preventable by ligation of both vasa deferentia.

Some of the poorer results of prostatectomy when frequency continues, sepsis remains, and difficulty of micturition recurs are due to the enlargement being malignant in nature. Not uncommonly a prostate is found to be carcinomatous only when a microscopic examination is made. If malignant disease is suspected and the surgeon believes that nucleation is possible, it should be proceeded with. Growth of a carcinoma of the prostate is often very slow. Three, four, or more years' survival with great amelioration of symptoms at least during the early part of this period is not unusual.

PERURETHRAL OPERATIONS

The place which perurethral operations should take, and the prognosis associated with them, is a little difficult to assess. Brilliant results in adenomatous enlargement as well as with fibrous obstruction have been reported in America and some very good results by surgeons in this country. Nevertheless, it must be confessed that the enthusiasm with which this procedure was welcomed by English surgeons at its introduction has waned. Difficulties from secondary hæmorrhages and in the control of sepsis are not easy to surmount, so that it is probable that the risk of the urethral operation for simple adenomata is not materially less than that of the open method. There is a tendency to restrict its use to cases of bladder neck obstruction and the malignant prostate.

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[1] Jour. Urol., 1931, xxvi., 643.

SPECIAL ARTICLES

MEDICINE AND THE LAW

The Bath Murder Case

THE conviction of Hinks in the Bath murder case, upheld on appeal, was largely due to medical evidence, and the main ground of appeal was that the judge at trial gave too little attention to the scientific witnesses called by the defence. Pullen, 81 years old, was found dead last December in the kitchen of his house. Hinks, his son-in-law living with him, said he heard a noise, went into the kitchen and found Pullen lying on his left side with his head and part of his shoulders in the gas-oven; two overcoats, he said, were draped over the front of the gas-stove and the trays had been removed from the inside of the oven. Hinks said he pulled the old man out by the feet and found Pullen had an apron held to his mouth. He turned off the gas and telephoned for the police and the ambulance men, volunteering to them the statement "you might find a bruise on the back of the head if you look where his head struck the floor." Dr. Scott Reid, the deceased's medical attendant, was reluctant to believe the story. "I know old Pullen," he said to Hinks, "and I don't think he could have done this in the way you describe." The aperture of the stove was 1 ft. 1½ in. across; the coats had not been drawn inwards by the insertion of the head and shoulders. Was it suicide or murder? The defence contended that Pullen was physically a fine old man, a good eater and well nourished, able to dress himself except for putting on his collar and tie. He had nearly been gassed, it was stated, in 1926, and he used to speak of it as a pleasant experience; "when I go, I shall go like that." The prosecution, on the other hand, said he was "tottery," constantly falling down and unable to pick himself up, incapable of the mental or physical effort to coördinate the elaborate actions of this supposed suicide, especially in the time at his disposal that night. He suffered, it was argued, from progressive senile degeneration and there had been a great change in his condition in 1933 between May, when he made a will, and September when, on a question of his executing a codicil, it was decided that he was quite unfit to

understand the testamentary act. Before July a male nurse and a female nurse were employed to look after him; in July they were dismissed and Hinks gave up his work to take charge of the old man.

The Court of Criminal Appeal found the verdict was not against the weight of evidence and that the alleged misdirections of the jury were unimportant. If the judge at trial had not dealt fully with the medical evidence for the defence, it must be borne in mind that this, the latest evidence to be given, would have been freshest in the jury's mind. There was adequate evidence of motive. The family solicitor had found that Hinks, who had then been married for a few months to Pullen's daughter, was selling some of Pullen's property at Dorking against his own advice. The solicitor had refused to negotiate a settlement of part of the old man's estate on Hinks and had taken steps to protect the property by securing the appointment of a committee in lunacy.

Plainly the most significant medical evidence was that of the medical attendant who knew better than anyone else the old man's physical capacity. Much time was devoted at the trial to the bruise on the back of the head. The prosecution said that chemical tests indicated that the blood in the bruise showed no trace of carbon-monoxide poisoning; therefore the bruise, a severe one, was inflicted before death. They offered no theory as to the weapon used, if any, but they said the bruise disproved Hinks's story, since it could not have been caused by the head dropping 6 or 7 inches on to the linoleum floor after the gas-poisoning. The defence contested the conclusions and the value of the tests made several days after death. This was the part of the medical evidence which, on appeal, was said not to have been appreciated by the judge at trial and not to have been adequately stressed by him to the jury. The main issue, however, was whether Pullen was capable of squeezing his head and shoulders into the gas-oven after the preparations described. The jury evidently thought he was not. A curious feature of the case was that, on the night before death, Hinks had said he found Pullen in his bath with his head under water and his face black. Medical help being summoned, the doctor did not quite accept the story as consistent with Pullen's condition. The defence said the incident showed that Hinks had no design of murdering his father-in-law. Perhaps an alternative theory would have been that Hinks was already busy with the illusion of suicide.

It is interesting to note that Pullen's death was fully examined by the Bath coroner, the inquest not being interrupted (under Section 20 of the 1926 Act) by the initiation of criminal proceedings in another court. This fact, suggesting that the police authorities did not at first regard the case as strong enough to take up, shows that the coroner's inquest has by no means spent its force as an instrument for the investigation of crime and the detection of the criminal. Since the case has ceased to be sub judice a Bath newspaper has published details of Hinks's previous career which, had they been known to the jury at trial, would certainly have been fatal to his prospects of acquittal. On the other hand the *Law Journal* has twice referred to the verdict and the result of the appeal with a certain misgiving. While agreeing that the judges had strong grounds for not interfering with the verdict of the jury, it observes that the verdict of a jury is not infallible. Too much attention, it considers, was paid to the probable cause of death, and too little to the improbable circumstances which may have been the real cause.

Marriage Annulled for Insanity

Although the subsequent insanity of husband or wife is not yet a ground for divorce, the law will annul a marriage if either of the parties was insane at the time of the ceremony. This is because marriage is a contract and, as the court observed long ago in the Earl of Portsmouth's case, "the very essence of that most important engagement is consent; without soundness of mind there can be no legal consent." Last week Mr. Justice Bateson annulled a marriage on the petition of the husband, who alleged his own insanity at the time of the supposed contract. He had, it was proved, been mentally unfit for several months before October, 1932, when he went from Manchester to Nottingham and met a woman whom he had known for some time. They agreed to marry and were married next day by special licence. The pair went back to Manchester and lived together for a few days; a fortnight after the wedding the husband was admitted to a mental hospital. On eventual discharge from the hospital he remained under treatment and was now sufficiently recovered to be able to understand his petition though not yet fit to give evidence. The judge had to apply a test formulated in 1825 in Durham *v.* Durham: "was there a capacity to understand the nature of the contract and the duties and responsibilities which it creates?" Mr. Justice Bateson said the doctors had satisfied him that the petitioner might very well be, and in their opinion was, incapable of understanding what he was doing when he went through the ceremony of marriage; he was insane at the time and in the circumstances the marriage was a nullity and must be so pronounced.

The petition last week was more successful than that of the Earl of Durham in the case already cited. The Earl called three doctors to describe the mental state of Lady Durham, who after marriage became manifestly insane. The judge, Sir James Hannen, took into account her present condition, and asked himself if it was recent and sudden or whether it had been of slow growth and had already existed at the date of the marriage so as to invalidate the contract. He came to the conclusion that Lady Durham's mental illness did not exist until a visit she paid to Cannes after her marriage. The Earl's petition was therefore dismissed with costs. In the Portsmouth case the marriage was pronounced void because, though the husband was weak-minded rather than insane, there was an element of something like fraud in the conduct of other parties. The Earl of Portsmouth was brought up to London in 1814 by his medical attendant and was delivered over to his trustees, one of whom was Harrison, the family solicitor. A week later the Earl was married to one of Harrison's daughters; it was a clandestine wedding between a man of weak and deranged mind and the daughter of his trustee and solicitor. No such suspicious circumstances were present in the case decided last week, where the medical evidence was found sufficient to make the contract void *ab initio*.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE CUTS IN MEDICAL SALARIES

THE Temporary Economies Bill, affecting the salaries of the officers of local authorities, underwent a radical change last week in the Senate. Sir Edward Coey Bigger, formerly medical member of the Local

Government Board, introduced an amendment which provided for the exclusion from the scope of the Bill of all medical officers. Several senators supported him, and no one spoke against the amendment except the Minister in charge of the Bill, who gave as his principal ground of opposition that he did not like putting any one class of officers in a privileged position. He did not suggest that the present salaries were too high, and he agreed with other speakers that the dispensary medical officers had rendered, and were rendering, good service to the public. Although an identical amendment had been rejected in the Dáil the Senate adopted the amendment by 22 votes to 12. The only other amendment made by the Senate was a simple consequential one. The Bill as amended will now be returned to the Dáil which can agree or disagree with the Senate. Its action will depend largely on the attitude which the Minister may adopt. Hitherto he has not appeared to be over-enthusiastic for this particular clause of the Bill, and it is hoped that he may consent to the Senate's amendments, and leave the interests of medical officers uninjured.

THE IRISH MEDICAL ASSOCIATION

The annual meeting of the Irish Medical Association will this year again be held in Dublin, probably in the last week of June. In future years it will be held alternately in Dublin and the provinces. It is intended this year to widen the scope of the annual meeting by including a scientific session as well as a business section. Arrangements are being made to hold two scientific discussions on matters of interest to general practitioners as well as to physicians and surgeons. The association is reviving an old custom—unobserved since before the war—of holding a dinner on the evening of the annual meeting. It is understood that the present president and vice-president, Dr. Robert J. Rowlette and Mr. Charles J. MacAuley respectively, have consented to accept nomination by the council for another year of office.

MEDICAL ORGANISATION IN THE IRISH FREE STATE

At many times in history the question has been mooted of a unification of medical organisations in Ireland by the amalgamation or coördination of the Irish Medical Association with the British Medical Association. It has often been pointed out that two organisations acting independently, even if usually harmoniously, were less effective than a single organisation. Until a few years ago it appeared as if no form of coördination were possible except the absorption of one association by the other, a proposal which, if made, would have roused bitter opposition. A few years ago, however, to avert analogous cases to that of Ireland in Australasia, in South Africa, and in Canada, the British Medical Association altered its constitution so as to permit of autonomy in the Dominions concerned while retaining a close association with the British Medical Association. It is believed that a somewhat similar arrangement might be feasible in regard to the Irish Free State, and it is understood that conversations have been begun between representatives of the two associations, but it is still too soon to form an opinion as to their outcome.

Last week in Dublin a conference was held between delegates from the poor-law medical officers in several countries to discuss the question of medical organisation. A suggestion had been made that the dispensary medical officers should form an independent association, and the conference was originally planned to forward such a project. Before the conference was summoned, however, it was clear that opinion in the service was against an independent association. The conference was well attended, and it discussed several matters of importance to the poor-law medical service. It unanimously passed a resolution strongly in favour of the union of the British Medical Association and the Irish Medical Association. A resolution was also passed requesting the General Council of Medical Associations to appoint a committee consisting of six poor-law medical officers to study the position of the poor-law service and formulate a programme of reforms.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

STERILISATION OF THE UNFIT

In its annual report for the year ending Feb. 13th, 1934, the Human Betterment Foundation of Pasadena, California, reviews the progress of sterilisation in the State of California since its first study of the subject in 1926. The State Eugenic Sterilization Law was passed 25 years ago. Up till the end of 1933 no less than 9782 persons have been sterilised, of whom 578 were operated upon in the last calendar year. These figures do not include sterilisation by private physicians of individuals at their own request, the number of these being unknown. Experience has shown that sterilisation is regarded as a protection and not as punishment, that it carries no stigma and does not affect the sex life in any way except to prevent reproduction. Dealing with the objection sometimes raised that the effect of a vasectomy, in sterilisation of the male, is permanent and may be regretted in cases of mistaken diagnosis or if the patient should change his mind, it is reported that a careful survey has shown that with proper technique operative restoration of fertility is not only possible but has been accomplished. Medical officers, probation and parole officers, and social workers all appear to be well satisfied with the operation of the law. It is stated that the policy of sterilising the unfit has been followed by a marked decrease in the number of sex offences. This is no doubt due to the possibility afforded to many to live a normal sex life to whom marriage would necessarily have been forbidden if they had not been sterilised.

AN INSTITUTE OF HUMAN RELATIONS

Mr. Paul Popenoe, who is secretary of the Foundation, also devotes a large share of his time to the direction of the Institute of Human Relations which is housed in three rooms of an office building in down-town Los Angeles (331–3, Consolidated Building). The institute provides advice to all-comers on every conceivable aspect of marriage, and in four years has been consulted by 10,000 applicants. Some of these come of their own initiative, or as a result of reading one of the institute's educational posters; a few are referred by doctors or clergy, while many are sent by the nine social agencies of the city including the Children's Protective Association, the Children's Home Society, and the Court of Domestic Relations. Analysis of the requirements of the first 10,000 clients has given the following table:—

Family maladjustment	1177	Education	3517
Premarital consultations	1048	Child welfare ..	753
Heredity	184	Legal	51
Sex problems ..	2914	Miscellaneous ..	356

The institute has a large volunteer corps of consultants in medicine, psychology, domestic science,

and other subjects; when a problem arises that is outside the scope of this staff the case is referred to an appropriate specialist. A valuable feature of the institute's work is what may be described as extension work in the field of education. A recent example of this is the convention entitled "Southern California Conference on Education for Family Life" held on March 3rd at the University of Southern California under the joint auspices of the institute and the department of education. Some of the subjects discussed at round tables with the assistance of mature and well-prepared experts are: premarital examinations, sex education of children in the home, voluntary sterilisation, current family literature, the problem of the movies (some of the most severe critics of Hollywood pictures are found in the close vicinity of Hollywood), improving the divorce courts, censorship, and social hygiene. Sections on What makes personality attractive, Love before marriage, and The choice of a mate were open only to college students and those of similar age.

A similar conference was held at Pomona College in Southern California on March 17th. It is certain that the Institute of Human Relations at Los Angeles is doing pioneer work of great significance.

TESTS FOR MOTOR DRIVERS

THE proposal in the Road Traffic Bill to establish tests of competence for drivers of motor-cars directs attention to the group of tests devised and standardised at the National Institute of Industrial Psychology. These consist of (1) psycho-physical tests, and (2) performance tests, all selected with particular attention to the qualities most needed in a driver.

PSYCHO-PHYSICAL TESTS

These include eight separate tests, of which the results are recorded in a "psychographic profile," proficiency in each test being tabulated as low, average, or good.

Reaction time.—The examinee sits facing a small screen on a chair with an arm-rest on the right side. Convenient to his hand is placed an instrument which has three levers, worked through pressure on red, amber, or green disc respectively, by thumb, index-finger, or little finger. At the periphery of an imaginary circle on the screen round discs of colour corresponding with those on the levers (and incidentally with the warning lights used on the roads) are thrown at irregular intervals and in unpredictable order. The examinee is asked to press the appropriate lever as soon as he sees a light. This test is designed to estimate his reaction time, choice, and distributed attention.

Resistance to distraction.—In the next test his duty is the same, but an attempt is made to distract his attention by a film shown on the screen with whose periphery he is chiefly concerned; he is encouraged to pay no attention to the film, but only to the incidence of the lights.

Vigilance.—In a third test he is required to pay close attention to the film, on the details of which he will subsequently be questioned, but at the same time to respond as quickly as possible to the lights as they appear.

An ingeniously constructed machine records each effective response, with the time, in fractions of a second, between the exhibition of the light and the response. The operator at the end of each test has only to divide the sum of reaction times by the number of responses to ascertain the average for the person tested. A wrong response, or failure to respond either through gross inadvertence or through too feeble pressure on the disc, carries no penalty. This seemed to us a defect in an otherwise admirably planned test, because to let the presence of other traffic, or the relation of a good story by a passenger, distract one's attention from the presence of a warning red light would be a major crime on the road. But it is easy to see that a wrong response, subsequently corrected, or the counting of complete failures would make the average reaction time, which the test is devised to estimate, unfairly long. Similarly, though completely missed shots at golf would have to be counted in a medal round, in a game against bogey each hole is taken by itself, and even complete failure at a few holes would be compatible with a first-rate score.

The film chosen as a distraction has the great merit for its purpose of having a universal appeal—the phenomenon of a fakir and others under hypnotism submitting cheerfully to physical insults which would cause unbearable discomfort to those not in a hypnotic state. Even a keen observer with a reasonably good memory, however, might well fail to take note of the details on which he is liable to be questioned.

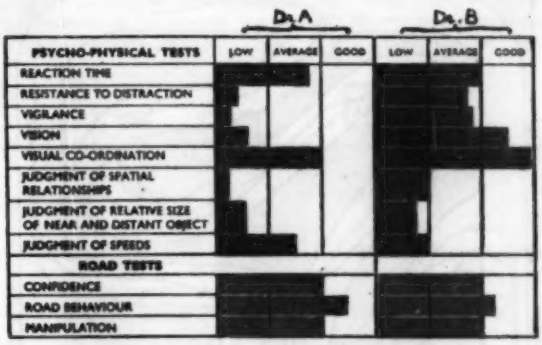

FIG. 1.—The comment made on these charts by the National Institute of Industrial Psychology is as follows: Driver A (Dr. A) would be a good enough driver on a safe road, as the last three tests show. However, as his vigilance is low, his sight is poor, and he is easily distracted, he would be the sort of driver who would not be aware of a dangerous situation till it was too late. As his perception of size and of spatial relationships is low, he would be liable to mishaps when he had to handle his vehicle in a confined space. Actually he was one of his firm's worst drivers.
Driver B (Dr. B) was one of his firm's best drivers. He has had only one accident in seven years. His equipment of psycho-physical qualities is not unusually good, but he is making the best of himself. It is unlikely that he will improve—he is already at his best.

Vision.—The examinee is asked to read letters of different sizes at a standard distance.

Visual coördination.—This test is the familiar one for heterophoria—the alignment of red and green bars of light seen through glasses of different colour for each eye. It is of interest that while eso- and exophoria are regarded as important, the rarer conditions of hyper- and hypophoria are held to have little relevance to driving ability

Judgment of spacial relationships.—In this test a tilted white disc is exposed for a moment, and the examinee has to mark in successive leaves of a book of pictures of circles and ellipses which picture resembles in shape the tilted disc.

This test distinguishes the person whose stereoscopic vision is defective.

Judgment of relative size of near and distant object.—A low screen whose width can be varied is placed near the examinee and between him and an apparatus consisting of two vertical posts, one stationary and the other capable

of moving towards the stationary one along a track graduated in linear measure. A button held in the hand has to be pressed to stop the approximation of one post to another, when the distance between them is deemed equivalent to the width of the screen. Several tests are made at each width of screen and the average is taken.

Judgment of speeds.—Two red objects on tracks are set at different speeds so that one overtakes or passes the other at a point hidden from the observer's view by a wooden screen suitably graduated in numbers. His task is to estimate behind what number the passing or meeting will take place. He is allowed 12 estimates in each case.

PERFORMANCE TESTS

The driving test proper, which consists of the manipulation of the controls and steering wheel of a stationary car, while a projector moving over a

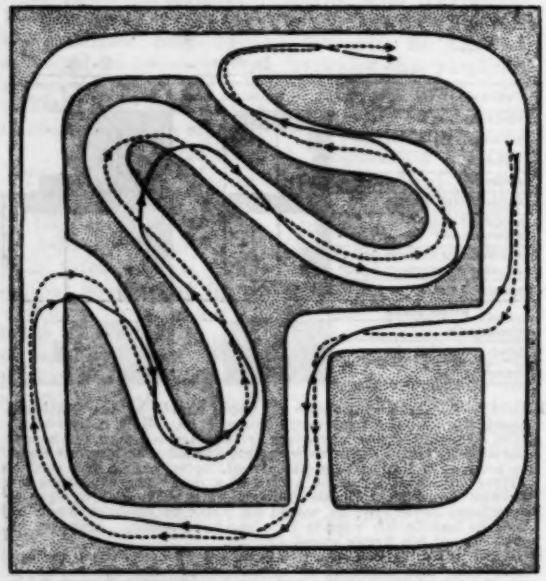

FIG. 2.—The dotted line represents a typical route over the track made by a good driver; the black line is the route of a bad driver. Even the good driver has cut one of the corners.

model landscape throws a moving picture on the screen, giving an illusion of actual driving.

The car is fitted with unusual controls, so that all those tested would be equally unfamiliar with their manipulation. There is no clutch or gear lever; the left foot is used for foot brake and the right for the accelerator. The track projected on the screen can be varied by the observer at will, from a fairly straightforward run to the set of sinuous curves depicted on Fig. 2, and these can be taken in either direction. The road to be travelled has a patch of grass on either side so that one who cuts the corners too sharply is liable to find himself off the road, without "crashing" into the trees or hedges. The steering wheel has an unusually narrow lock—i.e., a very small movement produces a considerable deflection in direction.

Watched from behind the screen, the miniature track projected is seen to be made of "grass" of green celluloid, and trees and bushes constructed cleverly of wisps of string and horsehair. The driver is allowed ample time—say 10 minutes—to accustom himself to the strange controls before the record of his progress is started. This consists of a tracing of his course in the form of a dotted line which records his pace as well as his direction, since the pen produces ten dots every second. Variations in the rate of progress therefore show in the relative distance of the dots apart—for example, on the straight or round corners on the moving track.

The *confidence*, *road behaviour*, and *manipulative* power of a driver are estimated from a study of his record on the track.

No credit is given for excessive caution—i.e., reluctance to drive at reasonable speed on a straight road. In fact, the difference between the rate of progress on the straight and when cornering is one of the points noted, the driver who has confidence in his own abilities to slow down in good time when necessary being assessed higher than one who evidently lacks it. Much importance is attached to proper cornering, though even really good drivers are usually found to have cut one or two of the many difficult corners on the track. For the benefit of those who may feel inclined to submit themselves to these tests it may be added that only straightforward driving is required of candidates. No other vehicles are on the road, and no unexpected emergencies, other than corners, need be anticipated. The sudden appearance on the track of a cyclist or car was at one time part of the test, but it has been discontinued since the personal element on the part of the observer who timed its incidence could not be excluded. Since the test is first and foremost a comparative one, any variation of this sort would tend to invalidate the results.

THE TESTS AS A WHOLE

A very large number of statistics would be required to prove definitely that the record of accidents incurred by drivers successful in these tests is significantly less than that of those whose response was relatively unsatisfactory. But such evidence as has been accumulated at the Institute points to this conclusion. The psycho-physical tests appear to us to be peculiarly well fitted to their purpose, especially the first three tests described above. Our representative, a doctor with driving experience extending over 25 years, was unable to complete the road tests, being one of the very few—less than 2 per cent.—who find that nausea is induced by the attempt to follow a track under the conditions offered. The factor responsible for this rare disability has not yet been ascertained. Without going so far as to suggest that all tests of behaviour on the actual highway, though their value is admittedly limited, should be superseded by those described above, we warmly endorse the plea made by Sir Ernest Graham-Little in the *Times* of April 23rd for the enlistment of the help of the industrial psychologist in planning tests suitable for mass application.

THE NEW ISOLATION HOSPITAL AT COVENTRY

THE opening on Monday last at Coventry of a new hospital of 148 beds for the isolation of infectious disease is an event of interest to those engaged in hospital administration. We are indebted to the medical officer of health, Dr. Arthur Massey, for the following account.

The site on which the hospital stands is 1¼ miles from the centre of the city; it comprises 16 acres, while 10 further acres of adjoining land have been reserved for future extension. The situation is open and the gentle slope gives a southerly exposure. The subsoil is of marl, clay, and sand. The buildings have been erected to the plans which won for their author, Mr. Stanley Atkinson (of Messrs. Wimperis, Simpson, and Guthrie, architects, London),

FIG. 1.—An "acute" ward block.

the premier award in the open architectural competition of 1931, in which 161 sets of plans were submitted. The administrative building is situated centrally, and the six ward blocks are placed symmetrically in terrace formation on the upper half of the sit. The ward blocks are of the one-storey type, save that in each of the two convalescent blocks a day room is formed over the centre at first-floor level. The buildings are completed in a good quality brick of pleasing shade. The grounds are suitably laid out and include two nurses' tennis-courts.

FIG. 2.

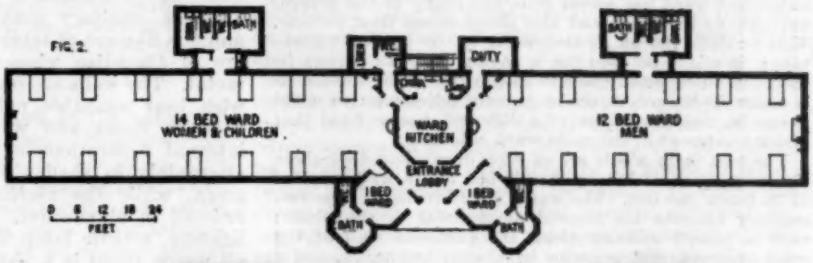

FIG. 4.

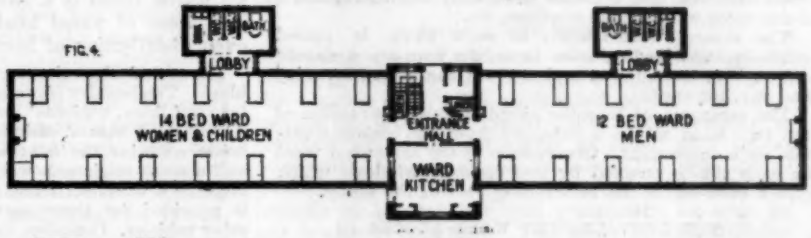

FIG. 5.

ADMINISTRATIVE BUILDING

The administrative block proper, the staff homes, and the kitchen department are grouped into one building. The building may thus be considered in three portions.

The front one-storey portion comprises the administrative section and contains: main entrance hall, doctor's office, matron's office, waiting rooms, suite for an assistant resident medical officer, matron's suite, small service pantry for these two suites, deputy matron's quarters, laboratory, dispensary and drug store, sanitary arrangements for visitors and staff.

The middle three-storey portion comprises the nurses' home and the domestic staff home. The nurses' home includes a spacious recreation room, dining hall and pantry, lecture room (with fitted blackboard and equipped with desks), 36 bedrooms, and the necessary sanitary arrangements. The domestic staff home comprises a large recreation room, dining hall with pantry, cook's quarters, 24 bedrooms (on second floor), and the necessary sanitary annexes. All sisters' and nurses' bedrooms are fitted with lavatory basins with hot and cold water.

The back portion of the administrative building consists of the kitchen and stores department. The latter comprises: kitchen, sculleries, larders, refrigeration chamber, service pantry, various stores, and mending room. The kitchen is fitted with electric ovens, and there

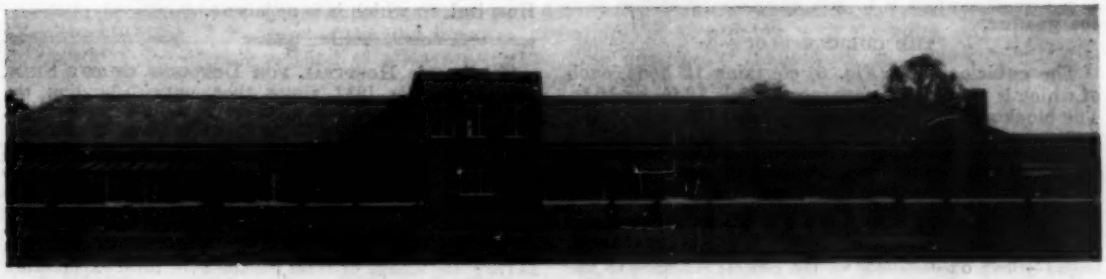

FIG. 3.—One of the "convalescent" ward blocks.

are electrically driven machines for various culinary processes. The prepared meals are delivered from the central kitchen to the wards, &c., in trolleys fitted with electrically heated containers.

The administrative building is sufficiently large to meet possible future extension of the hospital proper.

The hospital proper has 148 beds, distributed as follows: 28 beds in each of the three "acute" ward blocks, 26 beds in each of the two convalescent ward blocks, and 12 beds in the cubicle ward block.

THE "ACUTE" WARD BLOCKS

In each of the "acute" blocks there are two main wards containing 14 beds and 12 beds respectively and two single-bed wards. It will be observed (Fig. 1) that the two extensions containing the single-bed wards are located in the front of the block—one at each side of the central entrance—giving relief to the front elevation.

Each of the single-bed wards (Fig. 2) is self-contained—i.e., with its own bathroom, containing bath, lavatory, and w.c. Besides having access from the main ward, each single-bed ward has access from the lobby in the general entrance to the block and also direct access from outside. This enables the single-bed ward to be put to various uses; it might be used for a paying patient; it can be used for an especially severe case of the same disease as is under treatment in the main ward adjoining; or again it can be used for a case of a different disease from that under treatment in the main ward adjoining.

The two main wards are of such dimensions that there is a floor space of 144 sq. ft. per bed and a wall space of 12 ft. linear per bed. The wards are 12 ft. high. The two sanitary annexes are located at the rear of the block; each is placed midway along the posterior wall of the ward it serves, and contains bathroom, two w.c.'s, and a sluice room with bedpan steriliser, &c.

The nurses' ward-kitchen in each block is placed centrally, and leading from it at the rear are a sisters' duty room, linen room, and a room containing lavatory and w.c. for staff.

The arrangement whereby simultaneous observation of the two main wards is obtained from the central ward-kitchen is interesting. Observation of the single-bed ward on each side is enabled by two opposite windows which give a view across the intervening part of the lobby.

THE CONVALESCENT WARD BLOCKS

In each of the two convalescent ward blocks (Fig. 3) there are two main wards containing respectively 14 beds and 12 beds. There are no single-bed wards in these blocks. The entrance to the block is placed at the rear, while the central ward-kitchen faces to the front. A day room, approached by stairs from the entrance hall, is formed over the central part of the block at first-floor level.

Along the front of each ward a spacious verandah (not shown on the plan—Fig. 4) is provided; each verandah has access both from the ward-kitchen and from the ward it serves. The verandahs are comparatively low and very "deep" from front to back, and there is a "footing" wall in front; these are simple but indispensable points in a verandah which is to give adequate protection from the weather.

THE CUBICLE BLOCK

The cubicle block (Fig. 5) contains 12 beds, each of which is placed in a separate cubicle 12 ft. by 10 ft. The block also includes a nurses' ward-kitchen, stores, and two sanitary annexes each containing bathroom, one w.c., and a suitably equipped sluice room.

The sanitary annexes are placed one at each end of the block. Along the front of the whole block is an adequate verandah. On the latter and affixed at intervals to the outer aspect of the front wall of the block are six lavatory basins—three on each side of the central entrance to the block. These are, of course, to enable the physician, passing along the verandah from cubicle to cubicle—i.e., from one type of infection to another—to perform the necessary hand ablutions en route. In connexion with these externally placed basins, the water-supply pipes and the waste-pipes are so placed as to afford protection from the possible effects of frost—an elementary but noteworthy point.

From the central ward-kitchen, through observation of the 12 cubicles—six on each side—is enabled by means of glass panels in the dividing walls. In this connexion the perspective view of the cubicles is notably improved by the scheme of their internal decoration; six of the cubicles are finished in one colour and six in another, the cubicles of one colour alternating with those of the other. This simple expedient clearly "picks out" the individual cubicles as they are seen from the ward-kitchen.

The small operating theatre is attached to one end of the cubicle block. It contains a theatre, sterilising room, wash-up room, and blanket store.

MATERIALS AND TECHNICAL SERVICES

The floors of all wards are of "jarrah" wood boarding (Australian). The floors of lobbies, ward-kitchens, sanitary annexes, operating theatre unit, and the like are of terrazzo. The doors in the wards are of Canadian pine and the window frames of metal. The walls are rendered in plaster and finished with best washable paint. All corners and joints between floors and walls are well rounded. The internal decorations of the wards are carried out alternately in shades of sunshine yellow and pale green, while the vestibule of each ward block is finished in aluminium. In the scheme of electrical lighting, artistic lamp fittings are a feature, and in all wards there is a shaded wall light to each bed. A system of panel heating gives an adequate and even distribution of heat in the wards.

The technical services are grouped together in the power block. The laundry contains three separate receiving rooms for staff linen, patients' linen, and foul linen respectively. A full-sized steam disinfector is installed. The boiler house contains the heating and hot-water supply plant, and a small engineer's workshop. Adjacent to the boiler house is a water-softening plant. Garage accommodation is provided for three motor ambulances and for three other vehicles. Complete inter-communication between the buildings is secured by a system of internal telephones. A fire alarm system gives direct contact with the city fire station. The mortuary, attached to the power block, has accommodation for six bodies, and includes a post-mortem room and a viewing room.

COST

The cost of the hospital (excluding site) will be in the region of £113,000. The land comprising the site has been in the possession of the corporation for many years; the portion now occupied by the hospital is valued at £8000. This works out at about £820 per bed. The new hospital supersedes the old city hospital of 102 beds, which has been sold by the corporation to the Coventry and Warwickshire Hospital, to which it is adjacent.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN. The report for 1933 states that, notwithstanding the additional accommodation, there is still a waiting-list. There is an even more pressing need for a ward for children under three years of age, and the provision of pay-beds will have to be considered seriously "when times are more propitious." The out-patient department is congested, but the cost of rebuilding the hospital to incorporate the in- and out-patients' departments would be £60,000. In-patients last year contributed £968 and out-patients £4779; the excess of total income over total expenditure was £2171.

PANEL AND CONTRACT PRACTICE

Vexed Points in Certification

CERTIFICATION continues to receive attention from the approved society side, as it may well do, for on its adequate performance depends stability for their funds. At a recent conference between representatives of the Insurance Acts Committee and of approved societies a consensus of opinion was reached in relation to certificates given to pregnant women.

(*a*) That a medical certificate shall be held to be inadequate if it certifies the incapacity for work of the insured person on the ground of pregnancy alone.

(*b*) That a medical certificate shall be held to be inadequate if it certifies the incapacity for work of the insured person on the ground of pregnancy even with an indication of the period of pregnancy.

(*c*) That a medical certificate shall be held to be adequate if it certifies the incapacity for work of the insured person on the grounds of pregnancy and some disabling associated condition.

(*d*) That a medical certificate shall be held to be adequate if it certifies the incapacity for work of the insured person on the grounds of pregnancy, plus an indication of the period of pregnancy, and plus the character of the employment of the insured person.

DIAGNOSIS

The expression on the certificate of the nature of the incapacity is also under review. Societies complain that medical practitioners do not often give them sufficient information as to what is the matter with a patient; they receive certificates week after week for the same symptom, such as diarrhœa. This may be the correct cause of an insured person being unable to work, but it does not enable the society to form an opinion whether the case is likely to be a long or short claim upon its funds, nor can its sickness visitor decide whether home conditions are such that the member is taking proper care of himself or that the doctor's instructions are being carried out. Practitioners may be roughly grouped into two classes; those who frequently change the name of the incapacity entered up on the certificate, according to the condition of the patient, and those who do not.

For example, a doctor in the former group might issue a series of certificates week by week to the same patient, such as pyrexia, bronchial catarrh, influenza, pleurisy, pneumonia, emphysema, discharging sinus, debility following, &c. The risk he used to run was from the society's official concluding "this doctor obviously does not know what is the matter with this case: the diagnosis keeps changing—better send it to the regional medical officer." On the other hand the doctor who starts with the certifying a case of influenza as influenza, and repeats this as the cause of incapacity, runs the risk of the official saying "influenza does not as a rule last more than three weeks, something must be wrong here—better send it to the regional medical officer."

Probably in these days, with more experienced officials inspecting and scrutinising certificate forms, it is better to change the diagnosis of the cause of incapacity according to the stage of the illness rather than to adopt the second method of always using the same term.

PROGNOSIS

Society representatives report that extraordinarily few certificates ever have filled up on them the space provided for remarks or the date on which the patient should come to see the doctor again. It is thought that the use of this latter provision might considerably reduce the amount of money paid out in sickness benefit. Patients are apt to attend weekly and unless told on Monday to come again on (say) Wednesday, when they might probably be given a final certificate, they do not turn up again until the following Monday when, if they then get a final certificate, they will be be receiving about five days pay more than if they had been signed off as soon as thought to be fit for work. It has been suggested, though never seriously considered by either side, that possibly some wording might be added to the present certificate form under which the doctor might be asked in the first intermediate certificate to say approximately how long the illness would be likely to last, in such terms as: "You should in all probability be fit to resume work in —— days time." This would have the effect of putting the certifying doctor on his mettle to estimate as accurately as possible the severity of the trouble. It would inform the society as to how serious the doctor thought the incapacity was; the patient would realise quite early in trivial cases that the doctor did not think there was much the matter and, with some patients very loyal to their doctors, they would often do their utmost to be fit to time so as not to let their medical man down with the approved society.

The Post-office form of certificate for the employee contains a somewhat similar form of words. There it works smoothly and is found helpful to officials administering sick funds. No one could of course be accurate in such estimation of duration of incapacity and mistakes would be certain to occur in every doctor's prognosis, but results reviewed in aggregate would indicate the careless certifier, the percentage of his errors being much above the average.

FITNESS FOR HOUSEWORK

Recently Mr. Parkinson asked the Minister of Health in the House of Commons if he has authorised the decision that when an insured person who is in receipt of National Health Insurance benefits is certified by a medical officer as being able to do housework, though unable to follow her usual occupation, her benefits shall cease even though she intends to resume her own occupation as soon as her health will permit. The reply of the Minister is illuminating. He said there was no general decision that an insured woman who, though unable to follow her usual occupation is able to do housework, is to be treated as not entitled to sickness or disablement benefit. An approved society would not ordinarily regard such a woman as disentitled to benefit pending her early return to her normal employment. But in the case of a woman who is the domestic head of a household, and for whom accordingly the performance of household duties is in the nature of an alternative to her industrial employment, fitness for the former as well as for the latter form of work would probably be taken into consideration. Every case was to be considered on its merits and any woman who is dissatisfied with the decision of the society is entitled to appeal in accordance with the rules.

This question of housework is frequently raised by approved societies when sending cases to the regional medical officer. Insurance practitioners are not asked to certify on this question, they certify whether the insured person is fit to return to her normal employment. The position is not without difficulty for both parties, and it frequently arises on so-called Class K cases where a woman with employment ceases work on marriage and never intends to return to that employment. Some incapacity arises for which she claims a financial benefit under the

Act; what standard of employment is to be considered as applicable in such a case? Certainly not the last occupation, because that is finished for good; probably the housework standard is the fairest—the ability to do unaided the ordinary household duties of a working-class home. It will be noted in the Minister's reply that he suggests to any one dissatisfied that she should appeal. The result of such an appeal would be interesting. The decision on payment of financial benefit rests with the society, which would have to justify its decision before the appeal tribunal.

Temporary Residents

Dr. W. L. HARDMAN (Grange-over-Sands) writes: "Having read the note in THE LANCET of April 14th (p. 813) on remuneration for the temporary residents in a convalescent home, I thought it might interest you to know the point of view of a doctor who is distinctly dissatisfied with the rate of pay for these patients. This afternoon I have seen 25 patients, four of whom I considered needed treatment, and whose cards I took. For this work (2 hours) I receive 2*s*. 2*d*. or 6½*d*. each. I have to see all the new arrivals in case they are ill while resident there, but cannot take their cards, as evidence of treatment has to be given before pay is made. The other night at 10.30 P.M. I had to see a man and take him to hospital (16 miles away), arriving back at 2 A.M.; there is no appearance of receiving any extra pay for this man—just his 6½*d*. Quite often one has to see a man whose card one has not had in an emergency. As all these men (or women) have to be seen, I think the rate of pay should be higher."

OBITUARY

FREDERIC NEWTON GISBORNE STARR, C.B.E., M.D. Toronto, F.A.C.S.

THE death is announced by telegram as having occurred on April 21st of Dr. Frederic Newton Gisborne Starr, emeritus professor of surgery in the University of Toronto. His reputation as a surgeon was a distinguished one in Canada, in the United States, and in this country.

Prof. Starr was born in 1867 at Thorold, Ontario, the son of the Rev. Joseph Starr, and received his education at the High School, Toronto, and at the University in the city. He graduated as M.B., C.M. in 1889 and specialised in surgery from the beginning of his career, the greatest part of which was spent in Toronto. After holding numerous resident posts he was appointed surgeon to the General Hospital, Toronto, and in succession to the Hospital for Sick Children and to the Women's Hospital, and alike as teacher and practical exponent was recognised as a leader in his science. He held a particularly prominent place in medical organisation, his management of affairs being notable. He was for an extended period general secretary of the Canadian Medical Association, and was later a member of the executive of that body, becoming finally president in 1927. He served on the Council of the College of Physicians and Surgeons of Ontario from 1907 till 1911, and was president of that corporation in 1931–32. In the latter year he was elected vice-president of the American Surgical Association, while he was also vice-president of the American College of Surgeons, and during a meeting in Canada of the British Medical Association was chosen as a vice-president of that body. During the war he served with the R.A.M.C. in France with distinction, being mentioned in despatches and receiving the C.B.E. at the termination of hostilities. The figure of no Canadian was more familiar to British surgeons than his.

Prof. Starr married in 1904 Ann Callander, daughter of Mr. G. F. MacKay, of New Glasgow, Nova Scotia, but there was no child of the marriage. He was as widely known in Toronto society as he was in the academic world, being a familiar figure in the sporting and social clubs and associations of the city. His death is deeply regretted.

RICHARD LLEWELLYN JONES LLEWELLYN, M.B. Lond.

THE death is announced as occurring on Thursday, April 19th, of Dr. Richard Llewellyn Jones Llewellyn, who was well known in association with the treatment of rheumatism and allied conditions. He died in his sleep.

Dr. Jones Llewellyn was the son of an officer in the R.A.M.C., Major Morris Jones, of Aberystwyth, and was educated at Epsom College, University College, London, and the University of Wales. He qualified in 1894 as L.S.A., and in the following year graduated as M.B. Lond., taking also the English double qualifications. After being surgical assistant in the out-patient department at University College Hospital, he was for a time a resident medical officer in the Durham County Asylum, after which he started in medical practice in Aberystwyth. Later, and being by this time particularly interested in the numerous problems associated with arthritis and allied rheumatoid conditions, he commenced practice as a specialist in those disorders at Bath, and was appointed physician to the Royal Mineral Water Hospital at Bath. He now wrote voluminously on the subject, among his earlier contributions to medical literature being a book written in association with his brother, Dr. A. Bassett Jones, of Llandrindod, on fibrosis and neuritis, muscular rheumatism, and sciatica, a work which met with considerable approval and went into a second edition. Other contributions from his pen on the same subjects appeared in Latham's and English's System of Treatment, while he also wrote a treatise on gout, which was translated into French. Llewellyn possessed a picturesque and forcible style and his messages were always clearly delivered.

During the war Llewellyn, as a member of the Central Appeal Tribunal of the Ministry of Pensions, continued to impress upon the profession and the public the gravity of rheumatism as a menace to national efficiency, developing his arguments in a book on the principles which should regulate the evaluation of pensions, and writing and speaking much on his thesis and on malingering. The book was written in collaboration with his brother and the late Mr. W. M. Beaumont, the ophthalmologist. Llewellyn was a member of the Conference on Chronic Arthritis and Allied Rheumatoid Conditions convened by the Medical Research Council, and took an active share in starting an inquiry into the systematic prevention and relief of diseases in children. He held office in the section of physical medicine of the Royal Society of Medicine and was also president of the balneological and clinical section. Recently he had become interested in the possible association between rheumatic symp-

toms and certain dermatological conditions, and on the agenda for the next meeting of the Medical Society of London is the announcement of a paper by him (which will be read by Dr. D. F. Fraser Harris) on the skin in relation to rheumatism in childhood and after puberty.

Dr. Llewellyn, who took the additional surname of Llewellyn on that occasion, married in 1911 the Hon. Avis M. Blennerhasset, only child of the fourth Lord Headley and widow of Mr. D. H. Crosse.

ANDREW McFARLANE, M.D., M.R.C.P., D.P.H.

THE death occurred recently of Dr. Andrew McFarlane, who had recently been appointed medical officer of the Scottish Board of Health, and who had previously made his mark by his organising work as deputy medical officer, Darlington.

Andrew McFarlane, the son of James McFarlane, J.P., was born at Leadhills in 1898, and educated at Biggar Grammar School and the University of Edinburgh. He graduated as M.B., Ch.B. with honours in 1922, proceeded to the M.D. degree in the following year, took the M.R.C.P. Edin. in 1926, and the D.P.H. Edin. in 1927. His early professional life was a full one, for after filling the appointment of house physician to the Edinburgh Royal Infirmary, he was clinical tutor at the infirmary for a year. Next followed one year as R.M.O. at the Ministry of Pensions hospital, while later he was medical officer to the Tuberculosis Hospital in Edinburgh, and served as clinical assistant in the venereal department of the Royal Infirmary and at the Edinburgh Tuberculosis Dispensary. He was now for a brief time assistant medical officer to the Surrey county council, but in 1929 became deputy medical officer at Darlington, holding the post of assistant medical officer for education purposes and medical officer for venereal diseases. His work received the highest commendation from his superior officer, and when he decided to apply for the vacant post of medical officer to the Scottish Board of Health he had in his support a fine record of academic and practical success. In this last appointment he unfortunately never had any opportunity of displaying his talents, for illness prevented him from taking up the post, and after more than one unsuccessful operation he died at the early age of 36.

DAVID LECHMERE ANDERSON, L.R.C.P. & S. Edin., D.P.H. Edin. & Glasg.

WE regret to announce the death of Dr. David Lechmere Anderson, the well-known medical officer of health for Doncaster, which occurred on Wednesday, April 18th, at his home in that town. Although his death was not expected he had been in bad health for several weeks.

Dr. Anderson received his medical education in Edinburgh and took the double diploma of the Edinburgh Colleges in 1883, being then only just of age. He was a promising student and a medallist of the University of Edinburgh. He was for a period in general practice but, deciding to devote his time to State medicine, became M.O.H. for the borough of Peterhead and Ellon. In 1902 he was appointed M.O.H. for Doncaster, where in virtue of his office he was also medical inspector of schools and medical superintendent of the infectious diseases hospital, while he was also certifying factory surgeon. It was in relation to his interest in industrial disease that his best piece of work was done, when he made an inquiry into the possibility of reducing the amount of miners' nystagmus in the coal-fields. The inquiry was published in the *British Medical Journal* in 1920, and Anderson went closely into the relation of age as a factor in the production of miners' nystagmus, inquired into causation and the influence of heredity, and closed with a practical suggestion for the standard of admission to pit life judged by the normality of vision. He suggested that no youth should start work in a mine with imperfections of vision, while he attributed the disease, as others did, mainly to the bad lighting of the galleries in the coal-fields coupled with the abnormal postures which it was necessary for the miners to adopt. Dr. Anderson showed versatility, also, by contributing not only with frequency to the press upon health subjects but by writing serial fiction under the name of David Lechmere. He was a recent widower, but leaves a son in the medical profession.

NORMAN LAVERS, M.D. Brux., L.R.C.P. Lond., M.R.C.S. Eng.

BY the recent death of Dr. Norman Lavers, medical superintendent of Bailbrook House, Bath, the profession has lost a practitioner well known for his practical work as a medico-psychologist. A Tasmanian by birth, he received his medical training at Guy's Hospital medical school and qualified with the English double diplomas in 1896, proceeding later to the M.D. Brux. His professional life was spent in the institutional treatment of nervous disorders. His first post was as resident at Camberwell House, London, and after service there as senior medical officer he was appointed medical superintendent of the Canterbury City and Borough Asylum. He showed himself particularly interested in the neurological problems presented by his charges, and wrote shrewdly on the clinical aspects of functional disorder. He was then appointed superintendent of Bailbrook, Bath, and during the war held a temporary commission in the R.A.M.C., becoming consultant in nervous disorders to the Bath War Hospital. He had retired from professional work at the time of his death, but he held the post of medical superintendent of Bailbrook for over 20 years and earned a reputation for sound and scientific work.

BIRMINGHAM'S SPECIALIST HOSPITALS.—The annual reports are now published of the Birmingham and Midland Eye Hospital, the Birmingham and Midland Ear and Throat Hospital, and the Birmingham and Midland Skin Hospital. Last year the Eye Hospital treated 44,350 new out-patients, of whom over 26,000 were casualty cases. There were 1611 in-patients in the public wards and 117 private patients. The public patients showed a reduction of 234, which is attributed mainly to fewer cases of infantile ophthalmia. The follow-up work in connexion with cases of ophthalmia neonatorum continues to be attended with marked success. It was stated at the annual meeting that the time cannot be far distant when a complete rebuilding scheme will have to be considered, and that the nurses' home must shortly be rebuilt. The Ear and Throat Hospital is also in need of larger accommodation. The Skin Hospital is to have a new in-patient department at 35, George-road, Edgbaston, formerly a nursing-home. The existing house is to be utilised as a nurses' home, and the wards and their accessories will be housed in a new three-floor block. There will be 14 beds and a private ward for men, a similar number for women, with three private wards, a 16-bed ward, and three private wards for children. The present in-patient accommodation will thus be increased by 29 beds; the existing premises in John Bright-street will continue to be used as the out-patient department.

CORRESPONDENCE

THE BLOOD-BRAIN BARRIER IN INFECTIOUS DISEASES

To the Editor of THE LANCET

SIR,—I have been much interested in Prof. Friedemann's paper, especially in regard to the mode of action of diphtheria toxin. Like Dr. Goodall, I had not expected to find the ultimate action of diphtheria toxin ascribed to an effect on the brain or higher centres, and I am in complete agreement with him that all clinical observation points to a peripheral action. I cannot however go all the way with him in thinking that circulatory changes are chiefly peripheral, if by that, as I rather gather from his preceding remarks, he means chiefly vascular. The profound disturbances in heart rhythm, and the gross degenerative changes noted in both contractile and conductile tissues on histological examination, in my opinion point to a direct primary action of the toxin on the heart itself. While there can be no doubt that the changes in the peripheral circulation are also important, I must agree with Warthin that the essential lesion in the majority of cases of heart failure in diphtheria is in the myocardium itself.

I am, Sir, yours faithfully,

ALEX. JOE.

North Western Hospital, Hampstead, N.W., April 23rd.

SAFE MILK

To the Editor of THE LANCET

SIR,—I congratulate Major Lings on the outspokenness of his letter in your last issue in regard to loose milk delivery. In view of the Government's proposal to grant funds for milk publicity and for the encouragement of milk production, I think it is very important that the equally vital distributive link in the chain of supply should not be overlooked. It is obviously sound to synchronise steps for the improvement of supplies on the farm, in order to restore public confidence in milk, with propaganda for its increased consumption; but it is equally advisable to ensure that any raising of production standards is not neutralised by a reverse tendency in the distributive sphere.

At the moment one finds in almost every town retailers of raw milk and pasteurised bottled milk working side by side on exactly the same margin, despite the fact that an extra expenditure of at least 2*d*. to 2½*d*. a gallon is incurred by the second class of distributor in respect of processing and bottling undertaken with a view to rendering supplies as safe and reliable as possible. This is obviously quite inequitable and, in view of the Board's demand for still further reductions in the margin, can only mean that unless some discrimination is made there will be a tendency for the standard of distribution to retrogress rather than progress.

Now that the industry is highly organised, there appears to be no insurmountable difficulty, however, in arranging for the margin to be fixed on the basis of the distributing costs of raw milk, while firms who supplied pasteurised bottled milk received a rebate from the Board adequate to cover the average costs of this service. The retail selling price would of course remain the same in both cases. The Board would then receive a better average return on liquid milk sales as a whole, since instead of a margin of 1*s*. on all milk, 9½*d*. only would be allowed, subject to a rebate as above, while a higher standard of distribution would be encouraged for the good of the industry as a whole.

Unless and until there is a definite inducement for the retailer to turn over from the unhygienic system of loose milk delivery, I am dubious whether funds voted for improving the milk-supplies of the country will achieve their object—increased public confidence. And, unless the latter can be achieved, expenditure on advertising will certainly not bring the results which would otherwise accrue.

I am, Sir, yours faithfully,

Shalford, Surrey, April 20th. VALDER GATES.

THE RECOGNITION OF CHIROPODY

To the Editor of THE LANCET

SIR,—In the leading article of the last issue of THE LANCET, on the recognition of chiropody, Sir Henry Brackenbury is reported as saying: "What was he to do if a patient came to him with a bunion which he did not care to treat? He considered it common sense that such sufferers should go to the chiropodist."

I feel sure that the medical profession welcomes the recognition of chiropody, which by the definition agreed upon includes the treatment of all superficial excrescences occurring on the feet, such as corns, warts, callosities, and bunions. It would, however, be a pity for a medical man to advise chiropody in the case of a patient suffering from a bunion without considering the merits of the case; for the various treatments given by chiropodists for bunions are palliative and fail to get to the root of the trouble. There are alternative lines of treatment and it may require considerable experience to decide which is the most appropriate.

We meet cases in which chiropody has failed, not because it was badly done, but because it was not the right treatment; and it will be a pity if chiropodists are to be saddled with the care of such cases, for failure will bring their methods into disrepute.

I am, Sir, yours faithfully,

Portland-place, W., April 23rd. A. T. FRIPP.

TOBACCO SMOKING AND DUODENAL ULCER

To the Editor of THE LANCET

SIR,—In reply to Dr. Askey there is, I think, no doubt that the smoking of a given amount of tobacco on an empty stomach produces a much greater "nicotine effect" than the smoking of an equal amount of tobacco after a meal. This phenomenon is common to all forms of smoking and is not peculiar to cigarette smoking. The normal mode of entry of nicotine into the system is by its distillation from the hot tobacco into the mouth, where it dissolves in the saliva, is swallowed, and finally is absorbed into the blood from the stomach or small intestine or both. When the stomach is full the nicotine-saliva is diluted by the gastric contents and possibly some of the nicotine is destroyed by the digestive juices, consequently the amount of nicotine absorbed is less.

That the swallowing of tobacco dust by the cigarette smoker materially adds to the amount of nicotine absorbed seems to me very unlikely, for if it did we should expect to find cigarette smoking producing a greater nicotine action than the smoking of an equal quantity of tobacco in a pipe, whereas the reverse is true; but this does not mean that the

swallowing of tobacco dust is unimportant, for if tobacco itself is swallowed there may be toxic substances other than nicotine present in the gastric "brew." If this latter hypothesis is correct one would expect to find a high incidence of duodenal ulcer among tobacco chewers, but whether or not this is so, I do not know.

I agree that the question of smoking before meals should be investigated, though I do not see why breakfast especially should be incriminated. My own view is that for the prospective duodenal ulcer patient ordinary (non-inhaling) cigarette smoking is possibly harmful, inhalation of cigarette smoke is harmful, and inhalation on an empty stomach is very harmful.—I am, Sir, yours faithfully,

O. A. TROWELL.

Dept. of Physiology, University of Liverpool, April 23rd.

PARAPHARYNGEAL ABSCESS

To the Editor of THE LANCET

SIR,—On p. 878 of your current number you print an abstract of an article by MM. J. Piquet and P. Coumouma on lateral pharyngeal abscess. This is, I feel sure, the condition I described four years ago in your columns (1930, i., 792) as "parapharyngeal abscess." As the authors point out this is not a peritonsillar abscess, but is situated externally to the wall of the pharynx. They state that it arises in the lymph glands about the carotid sheath; but I still maintain that although cervical gland suppuration may occur in some cases, the essential feature is "a suppuration in the bucco-pharyngeal aponeurosis behind the palato-pharyngeus muscle and posterior faucial pillar. It tends to point in the pharynx about the level of the lower pole of the tonsil, in the potential gap between the palato-pharyngeus muscle in front, the lower border of the superior constrictor above, and the stylo-hyoid ligament (with the middle constrictor) behind." And it can be readily opened in this situation—far more readily than by the external route that MM. Piquet and Coumouma advocate for adults—the internal route being kept for children. It is an important condition to recognise, owing to its immediate relations with the great vessels of the neck, which have been eroded in several recorded cases: and it can be readily distinguished clinically from peritonsillar abscess—reserving this term for suppuration between the capsule of the tonsil and the sinus tonsillaris.

I am, Sir, yours faithfully,

Clifton, Bristol, April 20th. E. WATSON-WILLIAMS.

BROMIDE OF STRONTIUM IN EPILEPSY

To the Editor of THE LANCET

SIR,—Many years ago I wrote a letter to THE LANCET (1912, i., 1644) with reference to the treatment of epilepsy with bromide of strontium. Experience since then has confirmed me in the belief that the treatment of epilepsy with this salt is far superior to that with other bromides. The dose of ℥i. for adults is well borne and does not cause depression. I have had many cures by its use. Details of all these cases are in my case book, which I should be happy to submit to any competent authority for consideration.

As I am in my 79th year, I am anxious that this form of treatment should not be lost sight of, but be carried on by others.

I am, Sir, yours faithfully,

M. R. CALLENDER, Surgeon.

Bridgwater, April 16th.

SURVIVAL AFTER 600 GRAINS OF ASPIRIN

To the Editor of THE LANCET

SIR,—In view of the fact that the largest dose of aspirin taken without fatal result appears to be 485 grains, as recorded in Martindale's Extra Pharmacopœia, it is of interest to report a case of attempted suicide in which 600 grains of aspirin failed to have the desired result. A man aged 48 years, after a drinking bout, swallowed 120 five-grain tablets at midnight. An hour and a half later he became violently sick and continued to vomit until about 11 o'clock the following morning. When I first saw him at 7 P.M. on the same day he was comparatively comfortable and required no active treatment. His symptoms had been, at first, a very acute but transitory attack of perspiration and then the intensive vomiting, which no doubt saved his life. He was still complaining of a "rushing feeling" in his head and neck. Against advice he was up and about his work in a couple of days.—I am, Sir, yours faithfully,

Edinburgh, April 17th. S. LIPETZ.

MORTALITY AFTER PROSTATE OPERATIONS

To the Editor of THE LANCET

SIR,—Sir Francis Shipway has been good enough to point out to me that, in my two letters (THE LANCET, 1931, i., 1423, and ii., 325) reporting a series of 402 cases of prostatectomy operated on under a combination of a very small amount of spinal and general anæsthesia, I had omitted to mention whether the short or the longer operation was used. To make the report more complete I should like to say that in all these 402 cases it was the short operation, without exposing the bladder, which was used. In my experience the above-mentioned method of anæsthesia is also the best for the longer operation but a little more of the spinal anæsthetic must be used. I am, Sir, yours faithfully,

London, April 20th. H. M. PAGE.

A BUDGET REACTION—We have received from a group of co-signatories, partly medical, a letter criticising the Budget, in that the Chancellor, "has failed to apply his first principle of using his surplus to relieve those classes who suffered most when the crisis was acute. . . The Children's Allowance still stands at 2*s.* a week; the Means Test is still enforced; while the cost of Statutory Benefit to the unemployed is still borne to a large extent by working class families." As a protest the writers have decided to send a part of the benefit accruing to them from the reduction in the income tax to the following two organisations: the Committee against Malnutrition, 19c, Eagle-street, London, W.C.1, and the Children's Minimum Committee, Thames House, Millbank, London, S.W.1. They hope that the example will be followed by others.

GOLDEN-SQUARE THROAT HOSPITAL.—At the annual meeting last week it was reported that although the year's income had fallen by £3465, expenses had also been reduced and the year ended with a small credit balance. It has been decided to reduce the number of private wards and to form them into a single wing. The remainder of what were previously private wards are to be devoted to contributory patients under special conditions. It is hoped that this will stimulate further use of the private wards and help the revenue of the hospital.

PUBLIC HEALTH

List of Special Schools

THE list of special schools issued by the Board of Education is indispensable for the medical officer seeking accommodation for an abnormal child, whether deaf, blind, epileptic, crippled, delicate, mentally defective, tuberculous, or otherwise defective. This information is given in Part I.; Part II. contains a list of institutions providing higher education for blind, deaf, defective, and epileptic children; Part III. enumerates the recognised nursery schools. The number of schools has not materially altered since the last edition of the list (see THE LANCET, 1930, ii., 308); there are a few additions resulting from adaptation of buildings taken over from the old poor-law and considerably more nursery schools. As before, a school maintained by one authority in the area of another authority is entered under the latter, but is also given under the authority maintaining it—e.g., the L.C.C. residential school for the deaf at Anerley is entered under Kent (Penge), but is also given under the London special schools. A glance through the list still reveals the great lack of accommodation for the epileptic and the children with combined defects, otherwise in many areas the provision is nearly adequate. The booklet may be obtained from H.M. Stationery Office or through any bookseller (Pp. 48. 9*d*.).

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 14TH, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 3 (last week 6); scarlet fever, 2652; diphtheria, 1000; enteric fever, 24; acute pneumonia (primary or influenzal), 1485; puerperal fever, 61; puerperal pyrexia, 129; cerebro-spinal fever, 28; acute poliomyelitis, 1; encephalitis lethargica, 10; dysentery, 10; ophthalmia neonatorum, 87. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 23rd–24th was as follows: Small-pox, 11 under treatment, 1 under observation (last week 1 and 7 respectively); scarlet fever, 1579; diphtheria, 1703; measles, 3420 (last week 3648); whooping-cough, 302; puerperal fever, 37 mothers (plus 12 babies); encephalitis lethargica, 259; poliomyelitis, 4; "other diseases," 116. At St. Margaret's Hospital there were 16 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 155 (63) from measles, 22 (6) from scarlet fever, 48 (13) from whooping-cough, 41 (8) from diphtheria, 46 (14) from diarrhœa and enteritis under two years, and 111 (24) from influenza. The figures in parentheses are those for London itself.

Measles is again slightly on the wane. This week there were 11 fatal cases in Liverpool, 8 in West Ham, 7 in Middlesbrough, 6 in Barnsley, 5 each in Newcastle-on-Tyne and Salford, 4 in Dagenham. Bournemouth and Salford each reported one death from enteric fever. Whooping-cough caused 12 deaths in Liverpool, 3 each in Sheffield and Birmingham. Fatal cases of influenza were widely distributed among 48 great towns, the highest number of deaths being reported from Birmingham 15, Liverpool 10.

The number of stillbirths notified during the week was 303 (corresponding to a rate of 42 per 1000 total births), including 41 in London.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Bills Advanced

IN the House of Commons on Friday, April 20th, the Registration of Births, Deaths and Marriages (Scotland) (Amendment) Bill passed the report stage and was read the third time.

The Workmen's Compensation (1925) Amendment Bill (which provides for the security of colliery workers in respect of claims for workmen's compensation in cases where the employers become bankrupt) was read the third time.

On Monday, April 23rd, the Birmingham United Hospital Bill was read a second time.

HOUSE OF COMMONS

WEDNESDAY, APRIL 18TH

Foreign Milk and Milk Products

Mr. WILLIAM MORRISON asked the Minister of Agriculture the actual restrictions now in force with regard to the importation of foreign skimmed and full-cream condensed milk, sterilised cream, and milk powder.—Dr. BURGIN (Parliamentary Secretary to the Board of Trade) replied: The foreign governments mainly concerned with the export of condensed milk, milk powder, and cream to the United Kingdom have been asked by His Majesty's Government to make reductions as follows in such exports as from April 1st, the reductions proposed being in each case based on the imports during the same months of the year previous to the introduction of the voluntary arrangements—namely, June, 1932, to May, 1933:—

Condensed skimmed milk.—Reduction of 22½ per cent. for the quarter ending June 30th.

Cream.—Reduction of 30 per cent. for the quarter ending June 30th.

Condensed whole milk and milk powder.—Reduction of 20 per cent. for the time being. The Government has every hope that these proposals will be agreed to.

Imports of condensed milk, milk powder, and cream from foreign countries are also subject to the following customs duties: Condensed whole milk and milk powder, unsweetened, six shillings per cwt.; condensed whole milk, sweetened, five shillings per cwt., in addition to any duty payable on the sugar content; condensed skimmed milk and milk powder, sweetened, 10 per cent. ad valorem, or the duty payable upon the sugar content, whichever is the larger; cream, 10 per cent. ad valorem.

THURSDAY, APRIL 19TH

Children and Health Insurance

Mr. RHYS DAVIES asked the Minister of Health what reply had been returned to the representations he had received expressing the desire that young persons should, on entering employment after leaving school, be brought within the scope of national health insurance as in the case of young persons under the provisions of the Unemployment Bill now before Parliament.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend has promised to give the matter careful consideration, but has been obliged to point out the serious financial difficulties which make it impracticable to adopt the proposal at the present time.

Mr. DAVIES: Is the hon. gentleman aware that employers in many parts of the country dismiss boys and girls from their employment when they arrive at the age of 16 because of the contribution to the national health insurance scheme; and in view of the fact that the Unemployment Bill gets over that difficulty in respect of unemployment insurance, will the hon. gentleman look into the subject once more?

Mr. SHAKESPEARE: We have it in mind.

Poor Relief in England and Wales

Mr. TOM SMITH asked the Minister of Health the number of persons in receipt of poor relief in England and Wales on the last available date, giving separate figures for men, women, and children, and comparable figures for the same period during the past three years.—Mr. SHAKESPEARE replied: The total numbers of persons (men, women, and children) in receipt of poor relief in England and Wales (excluding rate-aided patients in mental hospitals, persons in receipt of domiciliary medical relief only, and casuals) on Saturday, March 24th, 1934, and on the corresponding days in 1933, 1932, and 1931 were 1,413,780, 1,357,236, 1,188,077, 1,038,432 respectively. The weekly returns from which these figures have been obtained do not distinguish the numbers of men, women, and children. These particulars can only be obtained from the annual returns as to poor relief on Jan. 1st, and the figures are as follows:—

—	Total persons in receipt of poor relief (excluding rate-aided patients in mental hospitals).			
	Men.	Women.	Children.	Total.
Jan. 1st, 1931 .	288,825	372,237	353,871	1,014,933
,, 1932 .	332,287	406,844	403,894	1,143,025
,, 1933 .	406,708	470,733	498,204	1,375,645
,, 1934 .	420,686	481,661	500,378	1,402,725

Effect of Fire Maroons on Nervous People

Mr. HUTCHISON asked the Home Secretary whether, in order to put an end to the obsolete system of summoning fire brigades by firing maroons whereby much suffering was caused to nervous people, he will circularise local authorities recommending the installation of telephones to ensure that the brigade presented itself promptly on an outbreak of fire.—Sir JOHN GILMOUR replied: The objections to maroons or sirens as a means of summoning a fire brigade are, I think, generally recognised, but neither I nor my right hon. friend the Minister of Health would feel justified in urging on the smaller brigades the expenditure which the provision of telephones or bells to firemen's houses would entail.

Imports of Milk and Milk Products

Mr. WILLIAM MORRISON asked the President of the Board of Trade how much was imported from foreign countries in the months of March, 1933, and March, 1934, of the following substances: skimmed condensed milk, full cream condensed milk, sterilised cream, and milk powder.—Dr. BURGIN replied: The following table shows the total quantity and declared value of the undermentioned commodities imported into the United Kingdom and registered during March, 1933 and 1934, as consigned from foreign countries.

Description.	March, 1933.		March, 1934.	
	Quantity.	Declared value.	Quantity.	Declared value.
	Cwts.	£	Cwts.	£
Condensed milk—Separated or skimmed ..	174,257	177,189	138,919	195,619
Whole	33,982	59,459	27,736	51,935
Cream: fresh ..	6,732	19,917	63	205
Other, including cream in air-tight containers			3,572	11,778
Milk powder ..	4,989	6,233	5,419	6,628

NOTE.—Particulars of the imports of sterilised cream, included under "cream" in the above table, are not separately recorded in the trade returns of the United Kingdom.

MONDAY, APRIL 23RD

Indian Medical Services

Dr. JOHN WILLIAMS asked the Secretary of State for India whether the proposal made in the Council of State that recruitment to the Indian medical services should be by simultaneous competitive examination in Britain and India had been agreed to by His Majesty's Government and the Government of India.—Sir S. HOARE replied: The resolution on this subject in the Council of State was withdrawn after the Government spokesmen had given reasons why the Government of India could not accept it and after an undertaking had been given that the debate would be forwarded to me. I have not yet received any observations from the Government of India on the matter.

Dr. JOHN WILLIAMS asked the Secretary of State for India whether he would state the relative proportion of Indians to Europeans now serving in the Indian Medical Service.—Sir S. HOARE replied: According to information available on March 1st the actual strength of the Indian Medical Service was 385 British officers and 240 Indian officers; 29 of the latter held temporary commissions.

Diseases of Animals Act

Mr. GLOSSOP asked the Minister of Agriculture if he was aware that a large consignment of pigs from Sweden to Canada were going to be transhipped within the port of London; and whether steps would be taken to prevent any contravention of the Diseases of Animals Act, which prohibited the bringing of live pigs and other animals to this country from the Continent of Europe.—Mr. ORMSBY GORE (First Commissioner of Works) replied: Yes, Sir. My right hon. friend has provisionally agreed to authorise this transhipment under conditions prescribed by him and no contravention of the Diseases of Animals Act will be involved.

TUESDAY, APRIL 24TH

Suicides through Gas-stoves

Mr. LECKIE asked the President of the Board of Trade whether, in view of the increasing number of suicides through gas stoves, he would make inquiries as to the practicability of introducing into coal-gas at the place of manufacture some pungent or disagreeable chemical agent which would render it more difficult for anyone attempting suicide in this way to do so.—Mr. RUNCIMAN replied: The practicability of introducing irritant or odorous material other than that provided for in the Gas (Carbon Monoxide) Order of 1922 was considered by the Committee on Deaths from Gas Poisoning in 1930, but after reviewing the objections to such addition the Committee decided to make no recommendation in this respect. In accordance with another recommendation a central advisory committee was set up by the industries concerned and I am satisfied that this committee would acquaint me with any development which would render further action practicable.

Milk-supplies to Military Hospitals

Lieut.-Colonel HENEAGE asked the Financial Secretary to the War Office whether the contracts of the hospitals under his control required the purchase of certified, grade A, or ordinary standard milk.—Mr. DUFF COOPER replied: Tenders are invited for fresh and for pasteurised milk for hospitals, but not for certified or grade A milk. The fresh milk has to comply with the Department's specification and is required to be not below the standard required by the Sale of Milk Regulations, 1901. Unless the cost is excessive, preference is invariably given to pasteurised milk, and this type of milk is being supplied to the majority of military hospitals under the existing contracts.

New Formulæ for Surgical Spirit

Miss HORSBRUGH asked the Secretary of State for Scotland if he would state on behalf of which local authorities in Scotland he had received representations during the last six months concerning the drinking of methylated spirits and the necessity for further restrictions on its sale; and what action he proposed to take.—Mr. SKELTON replied: During the last six months, representations in favour of legislation to prohibit or prevent the sale of methylated spirits or kindred spirits for human consumption have been made to my right hon. friend on behalf of the town councils of Aberdeen, Clydebank, Dundee, Edinburgh, Falkirk, Glasgow, Greenock, Inverness, Paisley and Stirling. As from March 15th, 1934, new formulæ for surgical spirit have been brought into operation by the

Commissioners of Customs and Excise. It is hoped that these will render surgical spirit undrinkable, and it is proposed to await the results of this experiment before considering whether further measures restricting the sale of methylated and surgical spirits are necessary.

Miss HORSBRUGH asked if the hon. gentleman would take steps to restrict the sale of methylated spirit which would not be affected by the new formulæ for surgical spirit.

Mr. SKELTON: I will consider that question.

Blood-tests as Evidence of Paternity

Sir FRANCIS FREMANTLE asked the Home Secretary (1) whether he was aware that, in a recent case of disputed paternity, both parties agreed to accept a blood-test as evidence, and that the magistrates decided the case without such evidence; and whether he would consider the advisability of securing the admission of such evidence on the requisition of either party with retrospective effect, and (2) whether he was aware that blood-tests were accepted in several countries as normal evidence of non-paternity; that this evidence was found to be conclusive in one out of three cases of actual non-paternity; and whether he would take the necessary steps to make such proof admissible in the English courts.—Sir J. GILMOUR replied: I am advised that if evidence with regard to a blood-test is available, such evidence is admissible under the existing law in this country. Such difficulties as exist appear to be rather of a practical than of a legal character and to arise from the fact that the cost of arranging for such a test would fall on the man concerned and that he would have to secure the coöperation of the woman. I am giving my careful consideration to the whole matter, but if there were any question of compelling persons to submit to a blood-test, legislation would be required for this purpose.

Sir F. FREMANTLE asked if it would be possible for the Home Office to make the fact known to the magistrates of the country that they might accept this evidence, which at present they were refusing.

Sir J. GILMOUR: I think there is no question that the magistrates are fully aware of that point.

Sir F. FREMANTLE asked whether in cases where magistrates had refused such evidence it would be possible for the case to be reopened.

Sir J. GILMOUR: No sir. It would be for the magistrates to sum up what was the value of such evidence.

Slum Clearance and Rehousing

Sir PERCY HARRIS asked the Minister of Health how many persons in England and Wales displaced by slum-clearance schemes during the last 12 months had been rehoused.—Mr. SHAKESPEARE, Parliamentary Secretary to the Ministry of Health, replied: The rehousing accommodation provided during the year ended March 31st, 1934, to replace houses demolished under the Housing Act, 1930, or to abate overcrowding in Improvement areas, was sufficient for the accommodation of 42,888 persons.

MEDICAL NEWS

University of Cambridge

The title of the degree of M.D. has been conferred on Dr. Kathleen Muir.

University of London

At recent examinations the following candidates were successful:—

DIPLOMA IN PSYCHOLOGICAL MEDICINE

With Special Knowledge of Psychiatry.—Winifred M. Burbury, M.B., B.S., A. B. Carter, Bernard Cates, M. S. Jones, and W. G. Rees.

With Special Knowledge of Mental Deficiency.—R. M. Bates.

Part A.—R. W. Maxwell, Grace H. Thomson, W. P. Berrington, Neil McDiarmid, W. E. McIlroy, and David Prentice.

At recent examinations at the London School of Hygiene and Tropical Medicine the following candidates were successful:—

D.P.H.

Part I.—O. M. T. Ansari, W. H. Crichton, F. R. Dennison, H. A. Direkze, Margaret L. Foxwell, Muriel O. Gibson, G. S. C. de S. Gunesekera, Ellen G. Heycock, F. E. Lipscomb, F. J. G. Lishman, G. H. Lowe, G. P. McC. Marshall, K. J. G. Milne, D. D. Payne, Ethel A. Perrott, C. D. Preston, Alison J. Rae, Llywelyn Roberts, L. B. E. Seneviratne, Mary Sutcliffe, L. G. W. Urich, and S. L. Wright.

Three lectures on experimental vertebrate embryology will be given at University College, Gower-street, W.C., at 5.15 P.M. on May 22nd, 24th, and 25th by Prof. W. Vogt of Zurich. Prof. J. P. Hill, F.R.S., will take the chair at the first lecture. Admission will be without ticket.

Geoffrey Duveen Travelling Studentship.—Applications are invited from medical graduates of the University for this studentship. It is of the value of £450 per annum, and it will be awarded to a research worker in oto-rhino-laryngology. Applications should reach the academic registrar of the University, South Kensington, S.W.7, before June 11th.

Research Funds.—Applications are invited for grants from the Thomas Smythe Hughes and Beaverbrook medical research funds, which are allocated for the support of original medical research. Grants may also be made from the Dixon fund for assisting scientific investigations. The latest date for application is May 15th, and particulars may be had from the academic registrar.

Royal Institute of Public Health

The final programme of the annual congress, to be held in Norwich from Tuesday, May 15th, to Whit-Sunday, the 20th, has now been issued. Application for membership should be made to the hon. secretaries of the institute, 23, Queen-square, London, W.C.1.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—A. E. Ginn, Guy's Hosp.; G. W. Hardy, St. Mary's Hosp.; R. G. Joyce, St. Bartholomew's Hosp.; H. Murkus, Univ. of Birmingham; D. Rocyn-Jones, Welsh National School of Medicine.

Medicine.—S. Grodd, St. Mary's Hosp.; H. G. Howitt, London Hosp.; L. A. Lewis, King's College Hosp.; T. Morgan, Guy's Hosp.; F. D. Paterson and J. H. Playne, St. Mary's Hosp.; P. H. Willcox, Univ. of Cambridge and St. Mary's Hosp.

Forensic Medicine.—P. T. M. Clarke, Middlesex Hosp.; S. Grodd, St. Mary's Hosp.; B. S. Minden, St. George's Hosp.; J. R. Owen, Univ. of Cambridge and St. Mary's Hosp.; F. D. Paterson, St. Mary's Hosp.

Midwifery.—J. A. Carter, Univ. of Cambridge and London Hosp.; S. Klein, Univ. of Vienna and St. Mary's Hosp.; J. E. T. Munn, St. Mary's Hosp.; C. W. O'Donoghue, London Hosp.; F. D. Paterson, St. Mary's Hosp.; D. Walton, Univ. of Manchester; J. P. Walsh Conway, Charing Cross Hosp.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: S. Grodd, T. Morgan, F. D. Paterson, J. H. Playne, J. P. Walsh Conway, and P. H. Willcox.

University of Glasgow

On April 21st the following degrees were conferred:—

M.D.—I. M. Christie and Harold Fairbairn (with high commendation); James Flind, S. I. A. Laidlaw, and Peter Shannon (with commendation); Alexander Duff, G. G. Macphee, N. McE. Montgomery, Archibald Ogg, Thomas Paton, H. S. Russell, A. G. Smith, Jean W. Symington, and R. N. Walker.

M.B., Ch.B.—E. W. Walls (with honours); Adam Muir (with commendation); J. M. Anderson, C. Arak, A. Cameron, D. Campbell, J. Campbell, W. Clark, J. M. Cook, R. G. H. Cunningham, Elizabeth M. Deighton, J. C. Fitch, C. M. Fraser, W. Gibson, J. Gilmour, W. Guthrie, Jean A. Holburn, A. S. Hutcheson, A. B. Kabnick, J. Kelly, S. M. Laird, C. M. Lamont, Jean H. M. Laurie, Magdalene Linton, S. Loman, A. M. McArthur, A. D. MacArthur, K. MacColl, Jeanie J. Macdonald, Maud P. MacDougall, S. W. MacDougall, D. Macfarlane, P. A. M. Macgregor, J. Mackenzie, M. J. McLaughlin, W. B. McLean, J. McPheat, T. J. R. Miller, N. Morison, W. W. Muir, J. Murray, S. S. Naftalin, J. S. Norwell, G. A. F. Quinnell, H. J. Reid, Jessie V. M. Robb, W. Rodger, R. L. Roxburgh, J. B. Shiel, E. I. Smith, Margaret B. Steel, J. N. R. Stephen, J. W. Strachan, J. C. Taylor, R. B. Taylor, Kathleen M. Warren, H. Weir, G. Wotherspoon, D. D. Young, and B. Zabb.

Queen's University Club, London

The annual spring dinner of this club will be held at the Dorchester Hotel, W., on Thursday, May 3rd, at 7.30 P.M., with Prof. R. M. Henry in the chair. Members may obtain tickets from the hon. secretaries at 101, Harley-street, W.1.

A Department of Industrial Medicine

The University of Birmingham has decided to institute a department of industrial hygiene and medicine, and arrangements are being made for its opening next October. The function of the department will be to undertake research in the application of medicine to industry, and to offer a special training to doctors who are whole- or part-time medical officers to industrial organisations or who wish to qualify for such posts. It is felt that Birmingham will be an ideal centre for such work, and the university will probably arrange to grant a diploma to those who complete the course of training successfully.

Dental Travelling Scholarship

Guy's Hospital dental school offers a travelling scholarship worth £250 to enable the holder to take out a course of at least six months' practical work in dental surgery at one or more colonial or foreign dental schools. Particulars were given in our advertisement columns last week (April 21st). Applications should be sent to the dean, Guy's Hospital dental school, London, S.E.1, not later than May 24th.

West End Hospital for Nervous Diseases

The Savill prize is offered biennially to a post-graduate student for a thesis on a neurological subject. Candidates must have attended the practice of the hospital, and must submit the subject of their choice to the examiners before May 31st. The thesis must be received by Nov. 30th. The value of the prize is £15, and communications should be addressed to the secretary of the hospital, Welbeck-street, London. W.1.

Hospital for Sick Children

A post-graduate course on diseases of children will be held at this hospital from April 30th to May 12th. Particulars will be given weekly in our Medical Diary. Applications should be addressed to the secretary of the hospital, Great Ormond-street, London, W.C.1.

Clinical assistants.—There are a few vacancies at the hospital for clinical assistants to the physicians to out-patients. Practitioners registered in Great Britain who are willing to give their services for a few hours on one or two mornings each week should communicate with the secretary of the hospital.

Light and Heat Exhibition and Conference

In connexion with the Hospital Equipment Exhibition and Conference which will be held this year at Grosvenor House, London, W., there will be a section devoted to light, heat, and massage in relation to medicine and surgery. The exhibition will be opened on April 30th, at 2 P.M., by Princess Marie Louise, and later in the same day papers will be read by Dr. William Brown, on the healing touch (2.30 P.M.), and Sir W. Arbuthnot Lane, on diet and race (6.30 P.M.). Speakers on subsequent days will be Mr. J. D. Magor Cardell (May 1st), Sir Kenneth Goadby, Mr. Cecil Voge, Ph.D., and Mrs. Marie Stopes, D.Sc. (May 2nd), Dr. J. Russell Reynolds and Mr. G. W. C. Kaye, D.Sc. (May 3rd), and Dr. C. W. Buckley and Dr. F. Howard Humphris (May 4th).

Royal Sanitary Institute

Sir Hilton Young, the Minister of Health, will address a special session of the health congress of this institute, which is to be held at Bristol from July 9th to 14th. The title of his address will be Some Aspects of the Housing Question. It is expected that 1400 persons will be present at the congress, and an elaborate programme has been prepared. In the health exhibition connected with the meeting will be found appliances, foods, and other exhibits illustrating municipal activities and the hygiene of the home. Particulars may be had from the secretary of the institute, 90, Buckingham Palace-road, London, S.W.1.

As a memorial to the late Prof. A. Bostock Hill, M.D., the council has decided to offer for annual award a challenge shield for the best celebration of Health Week in the Empire, outside the British Isles. Health Week this year will be from Oct. 7th to 13th, and overseas centres wishing to enter the competition must submit reports by Dec. 31st.

Royal Eye Hospital

This hospital in St. George's Circus, Southwark, closed 1933 with a credit balance of £1236. There were increases in annual subscriptions and donations, but they are still inadequate. The report emphasises the need for a rebuilding scheme estimated to cost £150,000. It is intended shortly to issue a public appeal.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, May 1st.

Orthopædics. 5.30 P.M. Annual General Meeting. Cases at 4.30 P.M.

Special Meeting of Fellows. 8 P.M. Demonstration by Dr. Russell Reynolds on X-ray Cinematography. Dr. Robert Janker (Bonn) will also show films. Admission by ticket only.

WEDNESDAY.

History of Medicine. 5 P.M. Annual General Meeting. Dr. Herbert R. Spencer: The History of Ovariotomy.

Surgery. No meeting of the Section on this day.

THURSDAY.

Tropical Diseases and Parasitology. 8 P.M. Special Meeting to consider regulations of the section. 8.15 P.M. Annual General Meeting. Dr. H. S. Stannus: The Hyperostoses of the Face and Cranium (Epidiascope).

FRIDAY.

Otology. 10 A.M. Annual General Meeting. Cases at 9.30 A.M. Dr. Albert A. Gray: The Otosclerosis Problem (Dalby lecture). Demonstration: Valve Amplifier Hearing Aids (Audiograph).

Laryngology. 5 P.M. Annual General Meeting. Cases at 4 P.M.

Anæsthetics. 8.15 P.M. Annual General Meeting. 8.30 P.M. Dr. R. J. Minnitt: Self-administered Analgesia for the Midwifery of General Practice (illustrated by film).

Obstetrics and Gynæcology. Members of this Section invited.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, May 4th.—8.30 P.M. (at the West London Hospital). Mr. A. Tudor Edwards: Malignant Disease in the Chest.

BIOCHEMICAL SOCIETY.

SATURDAY, May 5th.—2.30 P.M. (in the Department of Biochemistry, Oxford). Communications and Demonstrations.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W. TUESDAY, May 1st, and following Thursday.—5 P.M., Dr. C. H. Andrewes: Viruses in Relation to the Ætiology of Tumours (Oliver-Sharpey lectures).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W. MONDAY, April 30th, to SUNDAY, May 6th.—MAUDSLEY HOSPITAL, Denmark-hill, S.E.5. Course in Psychological Medicine. Afternoons.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Course in Dermatology. Afternoons.—CITY OF LONDON HOSPITAL, Victoria-park, E. Course in Cardiology. All day, Sat. and Sun.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Dr. A. E. Clark-Kennedy: Lecture on Auricular Fibrillation, at 2.30 P.M., on Tues. Thurs., at 4 P.M. The Skin in Relation to Rheumatism in Childhood and After Puberty, read by Dr. F. Fraser-Harris on behalf of the late Dr. Ll. J. Llewellyn.—PANEL OF TEACHERS. Individual clinics in various branches of medicine and surgery are available daily by arrangement with the Fellowship of Medicine. Courses of instruction, clinics, &c., arranged by the Fellowship of Medicine are open only to Members and Associates.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, May 2nd.—4.30 P.M., Mr. Kenneth Walker: Functional Disorders of the Genito-Urinary System.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

MONDAY, April 30th. to SATURDAY, May 5th.—Third Week of Intensive Course in Laryngology, Rhinology, and Otology.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

WEDNESDAY, May 2nd.—3.15 P.M. (at the Royal Chest Hospital, City-road), Dr. Peter Kerley: Radiology of the Cardiovascular System.

THURSDAY.—3.15 P.M., Dr. E. G. B. Calvert: Functional Disorders of the Gastro-intestinal Tract.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, May 3rd.—4.30 P.M., Colonel L. W. Harrison: Prevention of Venereal Disease.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

(First of 2 Weeks' Course.)

MONDAY, April 30th.—10 A.M., Dr. Hutchison: Ward Visit. 11 A.M., Mr. Lloyd: Tuberculosis of Bones and Joints. 12 noon, Dr. Sheldon: Pulmonary Tuberculosis. 2 P.M., Dr. Thursfield: Ward Visit. 3 P.M., Dr. Nabarro: Immunisation against Diphtheria, Measles, and Scarlet Fever.

TUESDAY, May 1st.—10 A.M., Dr. Shires: Diseases of the Bones. 11 A.M., Dr. Cockayne: Ward Visit. 12 noon, Dr. Pearson: The Breast-fed Infant. 2 P.M., Dr. Frew: Ward Visit. 3 P.M., Dr. Payne: Diabetic Coma.

WEDNESDAY.—10 A.M., Dr. Gray: Diseases of the Skin. 11 A.M., Dr. Paterson: Treatment of Pneumonia. 12 noon, Mr. Addison: Ward Visit. 2 P.M., Dr. Hawksley: Diagnostic Use of the Blood Count. 3 P.M., Dr. Signy: Treatment of Septicæmia.

THURSDAY.—10 A.M., Dr. Wyllie: Cerebral Paralysis. 11 A.M., Mr. Tyrrell-Gray: Ward Visit. 12 noon, Dr. Sheldon: Rickets. 2 P.M., Dr. Thursfield: Ward Visit. 3 P.M., Mr. Crooks: Nasal Catarrh and Sinusitis.

FRIDAY.—10 A.M., Dr. Cockayne: Ward Visit. 11 A.M., Mr. Barrington-Ward: Ward Visit. 12 noon, Dr. Pearson: The Bottle-fed Infant. 2 P.M., Dr. Frew: Ward Visit. 3 P.M., Dr. Bruce Pearson: Treatment in Hay-fever and Asthma.

SATURDAY.—10 A.M., Dr. Paterson: The Anæmic Child. 11 A.M., Mr. Penman: Inflammatory Conditions of the Eye. 12 noon, Mr. Browne: Ward Visit.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

DAILY.—2 P.M. Operations, Medical and Surgical Clinics.

MONDAY, April 30th.—10 A.M., Skin Clinic, Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Gynæcological and Surgical Wards, Eye and Gynæcological Clinics.

TUESDAY, May 1st.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Throat Clinic. 4.15 P.M., Lecture, Mr. Green-Armytage: Uterine Inertia and Uterine Spasm.

WEDNESDAY.—10 A.M., Medical Wards, Children's Ward and Clinic. 2 P.M., Eye Clinic.

THURSDAY.—10 A.M., Neurological and Gynæcological Clinics. 11.30 A.M., Fracture Clinic. 2 P.M., Eye and Genito-urinary Clinics.

FRIDAY.—10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Throat Clinic. 4.15 P.M., Lecture, Dr. Konstam: Microcytic Anæmia.

SATURDAY.—10 A.M., Medical and Surgical Wards, Children's and Surgical Clinics.

The Lectures at 4.15 P.M. are open to all medical practitioners without fee.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY AND RESEARCH, Paddington, W.

THURSDAY, May 3rd.—5 P.M., Sir Bernard Spilsbury: Applications of Physiological Principles to Medico-Legal Problems.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, May 1st.—5 P.M., Dr. H. W. Barber: Alopecia Areata and Vitiligo.

WEDNESDAY.—5 P.M., Dr. H. Corsi: Diseases of the Nails.

THURSDAY.—5 P.M., Dr. S. E. Dore: Lantern or Episcope Demonstration of Various Skin Diseases.

FRIDAY.—5 P.M., Dr. G. B. Dowling: Skin Diseases due to Protein Sensitisation.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, May 1st.—4.15 P.M., Dr. E. B. Leech: Colitis.

FRIDAY.—4.15 P.M., Mr. G. Jefferson: Demonstration of Neuro-surgical Cases.

UNIVERSITY OF BIRMINGHAM.

TUESDAY, May 1st.—3.30 to 5 P.M. (at the General Hospital), Dr. E. W. Assinder: Diagnosis and Treatment of Prostatitis. Demonstrations of Orthopædic Cases.

WEDNESDAY.—4 P.M. (in the Lecture Theatre of the Medical Faculty Buildings), Prof. E. A. Adrian: The Activity of Nerve-cells. (Last of two Lectures.)

THURSDAY.—4 P.M., Dame Louise McIlroy: The Toxæmias of Pregnancy. (Last of two Ingleby Lectures.)

FRIDAY.—3.30 to 5 P.M. (at the Queen's Hospital), Prof. Bertram Lloyd: Surgical Cases.

LEEDS GENERAL INFIRMARY.

TUESDAY, May 1st.—3.30 P.M., Prof. A. M. Claye: Demonstration in Gynæcological Cases.

GLASGOW POST-GRADUATE LECTURES.

WEDNESDAY, May 2nd.—4.15 P.M. (at the Royal Hospital for Sick Children), Dr. S. Graham: Medical Cases.

Appointments

BAILEY, K. V., M.D. Manch., M.R.C.P. Lond., M.C.O.G., has been appointed honorary gynæcologist to the Stockport Infirmary.

BEAUMONT, E. V., M.B., B.S. Lond., Certifying Surgeon under the Factory and Workshop Acts for the Brandon District of the County of Suffolk.

KLETZ, NORMAN., M.B. Manch., M.R.C.P. Lond., honorary assistant physician to the Manchester Royal Infirmary.

STARKEY, J. W., M.B., Ch.B. Edin., D.P.H., Medical Officer of Health, Colne, Lancs.

SUTHERLAND, DONALD MCKAY, M.D. Manch., F.R.C.S. Eng., honorary assistant surgeon to the Manchester Royal Infirmary.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary.—Asst. M.O. for Radium Dept.

Ashton-under-Lyne, District Infirmary.—Asst. Radiologist. £300.

Birmingham, Erdington House.—Deputy M.O. £800.

Birmingham, Yardley Green-road Sanatorium.—Jun. M.O. At rate of £200.

Birmingham, Selly Oak Hospital.—Cas. O. At rate of £200.

Birmingham University.—Lecturer in Bacteriology. £400.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Bridgend, Glamorgan County Mental Hospital.—Jun. Asst. M.O. £350.

Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

Cancer Hospital, Fulham-road, S.W.—Laryngologist.

Central London, Throat, Nose, and Ear Hospital, Gray's Inn road, W.C.—3rd Res. H.S. At rate of £75. Also Hon. Assts. in the Out-patient Dept.

Chichester, Royal West Sussex Hospital.—Sen. and Jun. H.S. £175 and £125 respectively.

Coventry and Warwickshire Hospital.—H.S. (Male). Also Cas. O. (Male). Both at the rate of £125.

French Hospital and Dispensary, 172, Shaftesbury-avenue, W.C.—Hon. Dermatologist.

Harrow U.D.C.—M.O.H. £1000.

Hospital for Sick Children, Great Ormond-street, W.C.—Physician to Out-patients. Also Surgeon; and Clin. Assts. to Physicians to Out-patients.

Ilford, King George Hospital.—Deputy Res. M.O. £200. Also H.S. At rate of £100.

Liverpool Port Sanitary Authority.—Asst. Port M.O. £700.

London County Council.—Asst. M.O. £600.

London Homœopathic Hospital, Great Ormond-street, W.C.—Res. M.O. £100.

London Hospital, E.—Hon. Clin. Asst. to Radiological Dept.

London Jewish Hospital, Stepney Green, E.—Res. M.O. and H.P. Also Cas. O. Each at rate of £150. And H.S. At rate of £100.

London University.—University Chair of Pharmacology. £1000.

Manchester Northern Hospital for Women and Children.—Sen. H.S. £130.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Manchester Royal Infirmary.—Sen. Asst. M.O. for Radiological Dept. £400.

Manchester, Withington Hospital and Institution.—Asst. M.O. £350.

Market Drayton, Cheshire Joint Sanatorium.—H.P. £250.

Merthyr Tydfil County Borough.—Asst. M.O.H. and Asst. School M.O. £500.

Middlesex County Council.—Dist. M.O.'s and Public Vaccinators. Each £50.

National Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. Dental Surgeon.

North-West District Child Guidance Clinic, 18, Belsize-crescent, N.W.—Director. £300.

Norwich, City of Norwich Mental Hospital, Hellesdon.—Res. Locum Tenens M.O. At rate of £450.

Paddington Green Children's Hospital, W.—Hon. Surg. to Ear, Nose and Throat Dept.

Port of London Sanitary Authority.—Boarding M.O. £500.

Princess Beatrice Hospital, Earl's Court, S.W.—Hon. Clin. Assts. and Hon. Anæsthetist.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80. Also two Res. Anæsthetists. Each at rate of £100.

Queen's Hospital for Children, Hackney-road, E.—Surgeon to Ear, Nose and Throat Dept.

Royal Free Hospital, Gray's Inn-road, W.C.—Sen. Res. M.O. £150.

Royal London Ophthalmic Hospital, City-road, E.C.—Out-patient Officer. £100.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.

St. Albans and Mid-Herts Hospital and Dispensary.—Res. H.S. £150.

St. Mary Abbots Hospital, Marloes-road, Kensington, W.—Asst. M.O. £350.

St. Mary Islington Hospital, Highgate Hill, N.—Asst. M.O. £250.

St. Stephen's Hospital, 369, Fulham-road, S.W.—Asst. M.O. £250. Also Clin. Asst. At rate of £100.

Salford City Education Committee.—Asst. School M.O. £520.

Sheffield Royal Hospital.—Res. Ophth. H.S. £120. Also Res. Asst. Cas. O. At rate of £80.

Shoreditch Metropolitan Borough.—M.O.H. £1000.

Southampton Children's Hospital and Dispensary for Women.—Hon. Anæsthetist.

Southend Municipal Hospital.—Sen. Asst. M.O. £350.

Southend-on-Sea, Infectious Diseases Hospital.—Asst. M.O. £600.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Orthopædic H.S. £150.

Sunderland Royal Infirmary.—H.S. £200.

Swanley, Kent, White Oak Hospital.—Res. M.O. At rate of £200.

Swansea County Borough.—Asst. M.O. £500.

West London Hospital, Hammersmith-road, W.—Hon. Dermatologist. Also Hon. Asst. Anæsthetist.

Westminster Hospital, Broad-sanctuary, S.W.—H.S. to Spec. Depts. At rate of £104.

Will Edmonds' Clinical Research Fund.—Fellowship. £500.

Winchester, Royal Hampshire County Hospital.—Res. Surg. O. At rate of £200.

Windsor, King Edward VII. Hospital.—Hon. Asst. Surgeon.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.

Wolverhampton, Royal Hospital.—H.S. At rate of £100.

NOTES, COMMENTS, AND ABSTRACTS

BUDGET RELIEF ON SMALL INCOMES

Mr. W. T. Fry, income-tax consultant (13, Buckingham Palace-gardens, London, S.W.1), writes: "Although the Budget gave some measure of relief to income-tax payers the man with a small income is still overburdened. It is to be hoped that next year the Chancellor will be able to restore the abatements which were in force prior to the emergency Budget of 1931. Some idea of the position is given by the following figures, which show the tax payable on an earned income of £650 by a man with family responsibilities:—

	1933–34.	1934–35.	1930–31.
Single man with widowed mother to support	£ s. d. 76 17 6	£ s. d. 69 3 9	£ s. d. 54 12 6
Married man	70 12 6	63 11 3	40 0 0
Do. with 1 child ..	58 2 6	52 6 3	26 10 0
Do. with 3 children..	38 2 6	34 6 3	15 13 4

From the above examples it will be seen that the relief given by the Budget is very small, and for this reason it is essential that the return forms which are now being issued should be completed with the greatest care and all possible abatements claimed."

A SEVERE WINTER FOR ANIMALS IN CAPTIVITY

THE Zoological Society's country home at Whipsnade has been showing increasingly the extent to which non-native animals can live an open-air life in this country, but the spell of cold weather at the beginning of last winter was a trying time both there and in Regent's Park. At Whipsnade the chief losses were four alligators, two nylghaie, four Canadian beavers, two axis deer, a tiger, a bison, a sloth bear, a sarus crane, and an ostrich. The report does not state whether all these animals succumbed to the cold, and indeed the experiment of keeping monkeys at Whipsnade during the winter was highly successful. A colony of 25 rhesus monkeys, provided with sheltering barrels in an enclosure around a tall oak tree in Wallaby wood, kept in extremely good health all the winter, although they killed the tree by eating all the young shoots. Moreover the two young chimpanzees who had spent the summer at Whipsnade, in a caravan provided with electric heating, stayed out the winter there and seemed to enjoy the opportunity of sun and open-air exercise even in the cold weather. In Regent's Park the cold snap and the foggy weather which preceded it played havoc in the outdoor aviaries and carried off two birds, a white crane and a cinereous vulture, both of which had been over 32 years in the collection. There was indeed a sharp rise in the incidence of respiratory disease among all classes of animals during this period, although it is gratifying to see how low has become the mortality from tuberculosis. Last year it was only 3·9 per cent. among mammals in spite of a small outbreak among coatis. The highest monkeys have kept quite free. Taken all round, the annual death-rate among acclimatised animals is only 19 per cent. for mammals and 23 per cent. for birds, among a total population of 725 and 1479 respectively.

TUBERCULOSIS AND CANCER

Two years ago Dr. Thomas Cherry, of Melbourne, read a paper[1] at the centenary meeting of the B.M.A. describing some experiments he had made in mice, which suggested that the inoculation of small doses of virulent tubercle bacilli favoured the development of tumours and intestinal ulcers. These results threw light, he thought, on the way in which the increasing death-rates from cancer approximately balance the reduction of the rates from tuberculosis. In a recent paper[2] he shows that the causes of death of the mean population aged 15–25 enumerated in England at the four census periods 1841, 1851, 1861, and 1871 are now complete to old age and those of 1881 to the age of 65. In each of the four complete sections of the population, by simply adding the deaths from phthisis and cancer and dividing the sum by the number of deaths from all causes, there is obtained an almost uniform percentage, and at the age of 65 a corresponding uniformity is found in the five series. After deducting deaths from accident from the total deaths the percentages are: for 1841 series 21·70, for 1851 series 22·16, for 1861 series 22·8, and for 1871 series 22·22. It is difficult to believe, he thinks, that these practical identities are due to coincidence. At the recent Australasian Medical Congress, held at Hobart, Dr. Cherry discussed the reliability of the earlier certificates of death. In the material he used, the deaths from cancer do not become important before 1880, because the age-groups from 15 to 45, which contribute most of the deaths from phthisis, yield only a small proportion of those due to cancer. The actual figures up to 1880 include 16,000 deaths from cancer in men and 49,000 in women. The probable error in the female deaths Dr. Cherry regards much less than in the case of males because in women a far larger proportion of cancer occurs in accessible sites.

[1] THE LANCET, 1932, ii., 518.
[2] Med. Jour. Australia, August 12th, 1933, p. 197

BRONCHOSPASM AND ASTHMA

WE have received a pamphlet on this subject from the British Felsol Co., Ltd., 15, Caroline-street, London, W.C., written to bring before the medical profession the value of Felsol in the treatment of asthmatic subjects. The composition of felsol powders (already given in THE LANCET, 1928, i., 534) is as follows:—

Phenyl-dimethyl-isopyrazolone ..	0·47
Phenyl-dimethyl-iodopyrazolone ..	0·03
Anilipyrine β	0·40
Caffeine	0·10
Ext. Visci. Alb.	0·01
Ext. Brachycladii	0·01

The powders can be prescribed by the medical man in accordance with the definite régime which he decides to adopt in the treatment of a case, the claim for felsol being that its administration relieves promptly the attack of asthma by its influence over bronchial spasm, so that only the most severe cases would require the injection of morphia.

A NOISE-EXCLUDING WINDOW

ON April 19th and 20th, by invitation of the Editor of the *Parthenon*, demonstrations were given at 43, Grosvenor-place, London, of a method of noise elimination, by which, without interference with ventilation, rooms may be made sound-proof. A specially fitted room was placed at the disposal of the inventor of a patent window by the Council of the Incorporated Association of Architects and Surveyors, the window being the design of Mr. E. T. Fisk, managing director of Amalgamated Wireless of Australia Ltd. Of louvre pattern, the panes of glass open outward, while inside the room each pane is covered by a sound-absorbing blind which can be adjusted as to the height and the angle of inclination. The intention was that the sound of outdoor traffic should ascend through the openings of the window panes and be partly absorbed and partly deflected back by the blinds. The room in which the demonstrations took place was constructed with "pioneer" partitions and a shipwright floor, both patent devices intended to isolate it from noise which might emanate from adjacent apartments; but the window was exposed to the roar of the traffic in Grosvenor-place. The noise was pronounced when the sound-absorbing blinds were drawn up, and when the door of the experimental room, which opened on a balcony, was unclosed. When the door was shut and the

blinds were adjusted the sound died down to an almost unnoticeable murmur. The blinds obstruct light to some extent, but sufficient is admitted for most purposes, and as regards ventilation, the window, when open, is claimed to be as effective for keeping out noise as an ordinary window when closed. The Fisk window, when closed, seems to be more sound-proof than ordinary windows. The window can be left open in driving rain without water entering the room, and the amount of dust entering the apartment from outside in dry weather is appreciably reduced by its construction. The invention is also useful as a sunshade, and ventilation is under full control. Easy fitting and low cost are other advantages claimed which should be of attraction to business firms and offices, and hospitals might particularly benefit by the adoption of the Fisk window.

A METHOD OF APPLYING TANNIC ACID TO BURNS

Dr. ARTHUR H. BENNETT (Northwich) writes: "It may be of some interest to readers to hear of a very simple method which I use to apply tannic acid to burns. Messrs. Woolley and Sons, of Manchester, have prepared for me surgical lint impregnated with tannic acid and mercuric chloride in such proportions that, when the lint is thoroughly saturated with water, it contains a 2 per cent. solution of tannic acid and 1/2000 solution of mercuric chloride. This affords a simple and convenient means of applying tannic acid to a burn, as suggested by Mr. Mitchiner, both as a first aid and as a permanent dressing. I have successfully used this method in a number of cases and the results have compared very favourably with those of others treated with fresh solution made from tablets."

A PAINLESS DRESSING FOR BURNS

Dr. E. S. Dukes (Mangonui, N.Z.) writes: The present treatment of burns is anything but satisfactory; we must all have witnessed the agony of patients during the changing of a dressing, and we know how often an anæsthetic has to be given, or a prolonged soaking, before the change can be effected. All this can be avoided by a dressing of boric-acid ointment spread upon thin rubber cloth. This never sticks, there is next to no discharge, and its removal is so painless that a child need not be awakened. The waterproof is scalded before use, and the same piece can be used again after rinsing and scalding. The wounded surface need not be washed, a new dressing being applied immediately the old is removed.

A NOTEWORTHY GOLDEN WEDDING

Mr. J. Lionel Stretton, J.P., L.R.C.P. Lond., M.R.C.S., and his wife celebrated their golden wedding on Saturday, April 21st. Mr. Stretton was present at the golden wedding celebrations of his grandfather, Mr. William Weston Stretton, J.P., and of his own father, Mr. Samuel Stretton, J.P., whom he succeeded in practice. On Saturday last Mr. and Mrs. Stretton were joined by their three children with their families. At the annual meeting of the Kidderminster and District General Hospital, of which Mr. Stretton is consulting surgeon and president, he received last year a jubilee presentation on the occasion of his completing 50 years as a member of the honorary medical staff, and in recognition of long, devoted, and valuable services. Mr. Stretton's organising abilities resulted in valuable extensions to the hospital which were opened by the Duke of York in 1926. Last December Mr. Stretton was honoured by his own profession from all parts of Worcestershire with a dinner in celebration of his 21st year as chairman of the County of Worcester Local Medical and Panel Committee, when representatives of the Ministry of Health were present. On that occasion, paying a tribute to his wife, he said, "I have the comfort of a good wife, who has helped me in my duties for the hospital, and I feel it only right that on this occasion I should refer to them." We congratulate Mr. and Mrs. Stretton in the name of the medical profession upon having followed the example of two preceding generations by celebrating a golden wedding.

THE SERVICES

ARMY MEDICAL SERVICE

Maj.-Gen. H. C. R. Hime, K.H.P., late R.A.M.C., retires on retd. pay.

Col. O. Ievers, late R.A.M.C., to be Maj.-Gen.

Lt.-Col. P. Power, from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Maj. & Bt. Lt.-Col. M. J. Williamson to be Lt.-Col.

TERRITORIAL ARMY

Lt.-Col. W. McK. H. McCullagh, late R.A.M.C., Mila., to be Maj., and relinquishes the rank of Lt.-Col.

Capt. W. H. Gratrix resigns his commn.

Capt. F. C. Lewis relinquishes his commn. and retains his rank.

Lt. R. H. Mortis to be Capt.

Lt. G. A. F. Holloway resigns his commn.

R. W. Hendry to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Maj. J. D. Fiddes having attained the age limit retires and retains his rank, with permission to wear the prescribed uniform.

Capt. G. Eager having attained the age limit retires and retains his rank, with permission to wear the prescribed uniform.

Capt. D. G. Coutts, from Active List, to be Capt.

Lt. J. Simpson, from Active List, to be Lt.

INDIAN MEDICAL SERVICE

Lts. E. H. Lossing and M. Sendak to be Capts. (provl.).

Rattan Kumar Misra and Amar Nath Duggal to be Capts. (on prob.).

Capt. B. K. Silkand resigns his temp. commn.

ROYAL AIR FORCE

Flight Lt. R. L. C. Fisher is promoted to the rank of Squadron Leader.

Births, Marriages, and Deaths

BIRTHS

NOTLEY.—On April 15th, at 105, Rockingham-road, Kettering, the wife of Dr. J. W. Notley, of a son.

RICHARDSON.—On April 20th, at 112, Highfield-lane, Southampton, the wife of L. Aylwin Richardson, F.R.C.S., of a daughter.

MARRIAGES

KENNEDY—DALES.—On April 14th, at The Priory Church, St. Bartholomew-the-Great, Smithfield, John Kennedy, F.R.C.S.I., to Sheila Freeman, only daughter of the late John Freeman Dales and Mrs. Dales, of Pentre Derwen, Oswestry.

DEATHS

CARR-CALTHROP.—On April 17th, at Croyland, Grange-road, Ealing, Middlesex, Colonel Christopher William Carr-Calthrop, C.B.E., L.M.S., J.P., aged 89 years.

LLEWELLYN.—On April 19th, Richard Ll. J. Llewellyn, M.B. Lond.

LLEWELLYN.—On April 20th, at 13, Westbourne-road, Penarth, Glamorgan, Thomas Richard Llewellyn, M.R.C.S., L.R.C.P., Regional M.O., South Wales, aged 64.

SPENCE.—On April 20th, at 18, Upton-road, Watford, Mary Spence, M.B. Ch.B., aged 53.

WATSON.—On April 20th, at University College Hospital, James Watson, L.R.C.P., L.R.C.S., L.D.S.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ARC LAMP CARBONS.—Messrs. Watson and Sons (Electro-Medical), Ltd., write: "An increased import duty on arc lamp carbons was imposed by the recent Budget, which will affect the prices of foreign-made medical carbons. It has been alleged that this will mean an additional burden on our hospitals, because they could not obtain British carbons equivalent to those manufactured abroad. We wish to emphatically state that British carbon manufacturers are in no way behind their foreign competitors in respect of either the quality or range of their products."